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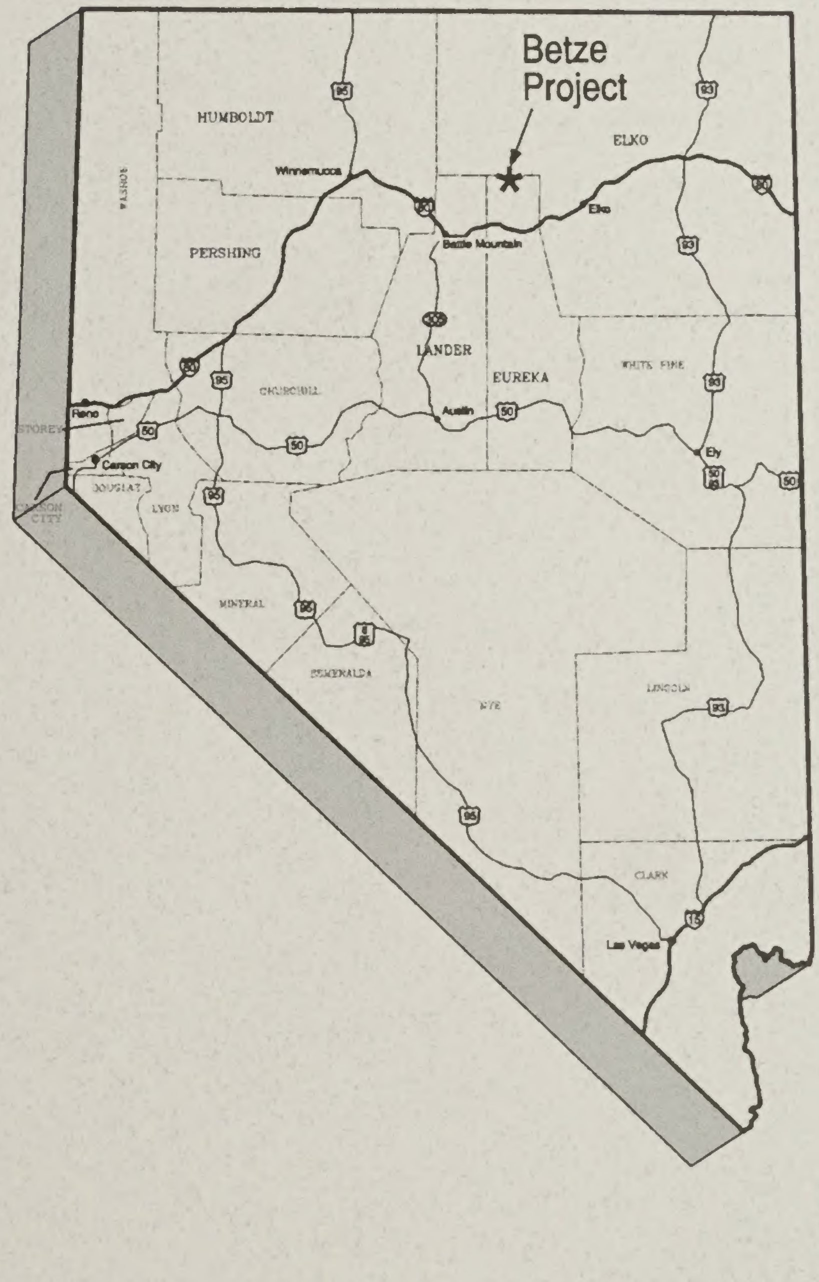
January 2003

Final Supplemental Environmental Impact Statement Betze Project

Barrick Goldstrike Mines Inc.



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United States Department of the Interior
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3900 East Idaho Street
Elko, Nevada 89801-4611
http://www.nv.blm.gov

In Reply Refer To:
1793.3/3809
NVN-070708

January 31, 2003

Dear Reader:

Enclosed for your review is the Final Supplemental Environmental Impact Statement (SEIS) for Barrick Goldstrike Mines Inc.'s Betze Project. The SEIS evaluates the environmental effects of Barrick's ongoing water management operations based on information collected since the original Betze Project Final EIS and Record of Decision (ROD) were issued in 1991.

This Final SEIS has been prepared in an abbreviated format and must be used in conjunction with the Draft SEIS issued in September 2000. The Draft and Final SEIS constitute the complete SEIS. The Final SEIS includes responses to comments received during the public review period on the Draft SEIS and revisions to the Draft SEIS. The Final SEIS also contains a comprehensive mitigation plan committed to by Barrick to eliminate or reduce both the predicted direct environmental impacts from Barrick's dewatering operations and the predicted cumulative impacts from Barrick's dewatering operations and other dewatering operations on the Carlin Trend. In addition, the Final SEIS incorporates the Upper Willow Creek Habitat Enhancement Plan to provide for mitigation in advance of potential environmental impacts from dewatering operations.

Following a 30-day public review period, a ROD will be published. The decision reached in the ROD is subject to appeal to the Interior Board of Land Appeals. The 30-day appeal period starts with the publication of the ROD, and implementation of the Plan of Operations will not begin until the ROD has been issued.

Your interest in the management of public lands is appreciated. If you have any questions, please contact Kirk Laird, SEIS Coordinator, at the Bureau of Land Management, Elko Field Office, 3900 Idaho Street, Elko, NV 89801.

Sincerely,

Helen Hankins

Helen Hankins
Field Manager

FINAL

SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT (SEIS)
BARRICK GOLDSTRIKE MINES INC.
BETZE PROJECT

LEAD AGENCY:
U.S. Department of the Interior
Bureau of Land Management
Elko Field Office

COOPERATING AGENCIES:
U.S. Fish and Wildlife Service
Nevada Division of Wildlife

PROJECT LOCATION:
Elko and Eureka Counties, Nevada

COMMENTS ON THIS FINAL SEIS SHOULD BE DIRECTED TO:
Kirk Laird, SEIS Project Manager
Bureau of Land Management
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DATE DRAFT SEIS FILED WITH EPA: September 15, 2000

DATE FINAL SEIS FILED WITH EPA: January 31, 2003

ABSTRACT

Following issuance of the Final Environmental Impact Statement (EIS) and Record of Decision for the Betze Project in 1991, Barrick's implementation of ground water pumping, water management operations, and monitoring provided new information regarding pumping requirements and potential impacts of the operations. In addition, Barrick has built a water treatment plant and a buried pipeline and open conveyance system to discharge up to 70,000 gallons per minute to the Humboldt River under a National Pollutant Discharge Elimination System Permit issued in 1996. Lastly, in 1997 Barrick submitted an application to the Bureau of Land Management (BLM) to amend an existing right-of-way to allow installation of a second pipeline across public domain. The Draft Supplemental EIS analyzed the potential impacts of Barrick's existing and future water management operations and the proposed buried pipeline, which was the Proposed Action. Since the preparation of the Draft Supplemental EIS, Barrick has withdrawn its application to amend the existing right-of-way for a second water pipeline across public lands in Boulder Valley; therefore, the sections of the Draft Supplemental EIS addressing this water pipeline are no longer relevant.

This Final Supplemental EIS is an abbreviated document. This document contains revisions to the Draft Supplemental EIS and the responses to comments received by the BLM during the public comment period on the Draft Supplemental EIS. Appendix A contains the Mitigation Plan developed by the BLM and Barrick. Appendix B contains Barrick's proposed Upper Willow Creek Habitat Enhancement Plan. The U.S. Fish and Wildlife Service's memorandum of concurrence relative to Endangered Species Act Section 7 consultation is provided in Appendix C. Appendix D contains documentation relating to Native American consultation.

Responsible Official for FSEIS: Helen Hankins
Manager, Elko Field Office

SUMMARY

Barrick Goldstrike Mines Inc. (Barrick) owns and operates the Goldstrike property, which is located in Elko and Eureka counties, Nevada, approximately 23 miles northwest of Carlin, Nevada. In 1989, Barrick submitted a Plan of Operations (Plan) to the Bureau of Land Management (BLM) for the Betze Project. As provided by the National Environmental Policy Act of 1969 as amended (NEPA), BLM prepared an environmental impact statement (EIS) with respect to Barrick's proposed Plan. The Final EIS (BLM 1991b) and Record of Decision (ROD) (BLM 1991d) for the Betze Project were issued on June 10, 1991. The Final EIS included a description of the environmental impacts projected to result from ground water pumping to be conducted by Barrick to lower the local ground water elevations below the proposed Betze mining operations.

In 1992, Barrick proposed to develop the Meikle Mine, an underground deposit located approximately 1 mile north of the Betze-Post Pit; the BLM prepared an environmental assessment (EA) for the Meikle Mine in May 1993 (BLM 1993a). The EA analyzed the potential impacts of dewatering this underground operation to the operation's ultimate depth of 3,600 feet above mean sea level (amsl). In 1994, the BLM prepared a Biological Assessment (BA) of Barrick's Dewatering Operations (BLM 1994b), including both the Betze-Post Pit and the Meikle Mine. The BA analyzed dewatering to an elevation of 4160 feet amsl. Also in 1994, the U.S. Fish and Wildlife Service (USFWS) prepared a Biological Opinion (BO) (USFWS 1994), which concluded that Barrick's dewatering operations to an elevation of 4160 feet would not likely jeopardize the Lahontan cutthroat trout (LCT). The BLM ultimately approved the Meikle Mine Plan of Operations in the Finding of No Significant Impact and Decision Record (BLM 1994c).

Barrick has conducted ground water modeling and implemented ground water monitoring programs in association with all of these analyses. The monitoring data collected since 1989 have been used to continually update and refine Barrick's ground water model as the basis for the prediction of the depth and areal extent of the cone of depression associated with mine dewatering and water management activities. The results of the data collection programs and ground water analyses are described in this Supplemental EIS. A description of Barrick's ground water model is included in Appendix D ***of the Draft Supplemental EIS***.

Supplemental EIS

Since the Betze EIS was issued, Barrick's implementation of the ground water pumping and management operations and its monitoring of ground water elevations have provided new information regarding the pumping requirements and potential environmental impacts of Barrick's ground water pumping operations at the Goldstrike Mine, which includes the Betze-Post Pit and the underground Meikle Mine. Also, in July 1996 the Nevada Division of Environmental Protection (NDEP) issued a National Pollutant Discharge Elimination System (NPDES) Permit to Barrick authorizing the discharge of up to 70,000 gallons of water per minute (gpm) to the Humboldt River. Barrick completed construction of a treatment plant and conveyance system in August 1997 and discharged water to the Humboldt River from September 1997 through February 1999. In May 1997, Barrick and Elko Land and Livestock Company (ELLCO) submitted an application to the BLM to amend an existing right-of-way ***(ROW)*** to authorize the installation of an additional buried pipeline across public domain land administered by the BLM as part of the existing water conveyance system. ***ELLCO and Barrick subsequently have withdrawn their application to amend the existing ROW for this water pipeline.***

The BLM prepared a Cumulative Impact Analysis (CIA) report (BLM 2000b) to address potential cumulative dewatering and discharge impacts associated with Barrick's Betze Project and Newmont Gold Company's (Newmont's) proposed South Operations Area Project Amendment and Leeville Project. The results of this analysis are summarized in Chapter 5.0 of ***the Supplemental EIS***. The CIA resulted in the implementation of mitigation measures to address the cumulative impacts of the ground water pumping and water management operations of these three mines.

This ***Final Supplemental EIS*** evaluates the environmental effects of Barrick's ongoing Goldstrike Mine water management operations.

Summary of Impacts

Geology

Two sinkholes have been documented to-date in the area affected by dewatering at the Goldstrike Mine: (1) a sinkhole approximately 3.5 miles northwest of the center of the Betze-Post Pit, and (2) a sinkhole approximately 2.8 miles west of the center of the Betze-Post Pit. In addition, an open fracture was discovered in the bottom of the south-central portion of TS Ranch Reservoir in 1990. This fracture presumably existed prior to reservoir development; however, piping and/or dissolution of the fracture-filling material occurred after the reservoir was used to store water.

Available information on the geology in the region and prediction of ground water drawdown were used to identify areas that potentially could be susceptible to sinkhole development. These areas include the large area underlain by carbonate rock located between the Betze-Post Pit and the Gold Quarry Pit, and the area northwest of the Betze-Post Pit. The development of sinkholes can pose a hazard to livestock, humans, and wildlife. If a sinkhole develops in an area containing buildings, roads, or other structures, damage to these structures may result.

Water Resources and Geochemistry

Impacts from Mine Dewatering and Localized Water Management Activities

As of the end of 1998, over 1,500 feet of drawdown of the water table had occurred in the vicinity of the Goldstrike Mine. The area with at least 10 feet of measured drawdown extends approximately 15 miles northwest-southeast and 5 miles northeast-southwest.

Barrick began delivering water to the TS Ranch Reservoir in May 1990. A large percentage of the water that flowed into the reservoir seeped through a fracture in the floor of the reservoir and flowed into the rhyolite formation. The seepage resulted in mounding (increased ground water elevations) in the rhyolite and alluvial aquifers in upper Boulder Valley. In 1992 and 1993, seepage from the reservoir resulted in three new springs (Sand Dune, Knob, and Green springs) in the northeastern portion of Boulder Valley. Barrick continued to infiltrate water into the fracture until early 1996 when ground water mounding and discharge from the springs in Boulder Valley reached a maximum with the combined flows reaching a peak of approximately 30,000 to 35,000 gpm. At the end of 1998, water levels in the Boulder Valley region had risen approximately 70 feet in the Sheep Creek Range and 50 feet in the alluvium in upper Boulder Valley. From April 1996 through early 1999, water management activities were modified to include discharge to the Humboldt River such that excess mine water no longer seeped through the fracture. As a result, the flows in the springs diminished to approximately 5,000 gpm by the end of 1998; ground water mounding also diminished during this period. Beginning again in 1999 and under Barrick's current water management plans, excess water would be allowed to infiltrate into the rhyolite formation in Boulder Valley through the end of mining. However, ground water levels are carefully monitored to keep spring discharges to a minimum. Under this scenario, the area affected by ground water mounding would persist through the end of mining and would gradually dissipate in the postmining period.

A numerical model was used to estimate the areal extent, magnitude, and timing of drawdown from the Goldstrike Mine through the end of mining and into the postmining period. The extent of the 10-foot drawdown contour would expand after mining ceases and would reach a maximum extent approximately 100 years postmining. At 100 years, the 10-foot drawdown contour is predicted to extend approximately 11 miles northwest, 15 miles southeast, and up to 12 miles southwest from the center of the Betze-Post Pit. The expansion of the area of drawdown would result in part from continual long-term passive inflow of ground water to the pit.

As of the end of 1998, there were 14 identified spring sites located within the existing 10-foot drawdown contour; several of the monitored springs had either dried up or had reduced flow. These springs are located in Boulder Creek, Brush Creek, and upper Rodeo Creek in the vicinity of the Betze-Post Pit. Mine dewatering activities have probably caused at least three of these monitored springs to dry up. It is possible that other springs in these areas, in addition to those currently included in the annual monitoring program, also have been affected by mine dewatering.

There are 67 identified spring sites located within the maximum model-predicted area having at least 10 feet of drawdown. Individual springs and perennial stream reaches are supported by discharge from either the regional ground water aquifer system or from more isolated or perched aquifers residing above the regional ground water system. Only those perennial sources that are hydraulically connected to the regional ground water system could potentially be impacted by mine-induced drawdown. Based on available information, significant impacts to springs and perennial waters located on the eastern slope of the Tuscarora Mountains are generally not anticipated. Impacts are likely at local spring and stream reaches located east of the Betze-Post Pit on the western slope of the Tuscarora Mountains as the magnitude and area of drawdown expands in the future. In this region, springs and perennial streams at higher elevations (generally above 6,000 feet) are less likely to be affected than those at lower elevations. Current drawdown patterns and projected drawdown indicate that the area of drawdown is expanding in a northwest direction toward the upper Antelope Creek and Squaw Creek areas. If drawdown extends to this area in the future, some springs and perennial stream reaches, particularly in upper Antelope Creek (below the confluence with Squaw Creek) and lower Squaw Creek, could be affected.

A potential reduction in the baseflow of perennial springs and streams could affect surface water rights within the drawdown area. There are 19 surface water rights that potentially could be impacted by dewatering-induced drawdown. Of these, seven are used for irrigation, seven for stock watering, three for mining and milling, and two for wildlife. The actual potential for impacts to individual water rights would depend on the site-specific hydrologic conditions that control surface water discharge.

The results of hydrologic modeling indicate that water levels in 64 wells potentially could be lowered by 10 to over 100 feet as a result of Barrick's ground water pumping. Specific impacts to individual wells would depend on the well completion, including pump setting, depth, yield, and premining static and pumping water levels. Lowering the water levels in these water supply wells potentially could reduce yield, and/or increase pumping cost, or if the water level were lowered below the pump setting or below the bottom of the well, the well would become unusable.

No detectable changes in ground water quality have been observed in monitoring wells located in areas of Boulder Valley where water management activities have caused ground water mounding. Based on the monitoring to-date, future infiltration activities in Boulder Valley associated with the mine water management activities are not expected to affect water quality in the alluvial and rhyolite ground water system.

Once dewatering operations cease, a pit lake would begin to develop in the Betze-Post Pit. The pit lake is predicted to attain steady state (or equilibrium) conditions at greater than 200 years after mining. After the pit lake level reaches equilibrium, the numerical ground water model predicts that because of evaporation, a long-term cone of drawdown would persist for the foreseeable future. Based on the hydrologic model, the pit lake is predicted to behave as a long-term hydraulic sink; therefore, outflow from the pit lake to the surrounding ground water system is not expected. In the long term, the pit lake water is predicted to be near neutral pH. The predicted concentrations of total dissolved solids and sulfate and concentrations of antimony are predicted to exceed Nevada drinking water standards. Total dissolved solids and sulfate concentrations would gradually increase over time as a result of evapoconcentration of the lake waters. However, since the pit lake is not expected to discharge to either surface or ground water, the pit lake is not expected to degrade surrounding waters of the state.

Impacts to the Humboldt River

Discharges to the Humboldt River from the Goldstrike Mine were initiated in September 1997 and continued through February 1999. The maximum recorded discharge rate was approximately 57,000 gpm (127 cubic feet per second) during October and November 1997; much smaller discharges occurred due to irrigation during the growing season of 1998. Discharges to the river varied between approximately 22,000 and 50,000 gpm (50 to 110 cubic feet per second) in late 1998 and early 1999 before ceasing altogether.

During the period of Goldstrike Mine discharges, Humboldt River flows were within the natural range of historic flows and mimicked the high snowmelt-derived flows of the 2 years prior to the mine discharges. Since there is a substantial reduction in river channel flows in the downstream direction, modifications to flow conditions were less at Comus and farther downstream than they were at Battle Mountain. Water levels in the river during the high-flow seasons were not affected, and low-flow levels increased by approximately 1 foot. Changes to channel geometry likely were limited to erosion and sedimentation in the low-flow section of the river; these effects were removed or substantially mitigated by much higher flows in the river during spring runoff. Lateral channel migration is not known to have been directly caused by mine discharges. The reaches immediately upstream and downstream of the Goldstrike Mine outfall have undergone changes in position historically, and natural channel modifications are difficult to separate from potential discharge impacts to-date. If future Goldstrike Mine discharges occur, computer simulations indicate that projected impacts would be similar in their limited extent and magnitude to the impacts to-date. Major changes to water uses or water rights for the Humboldt River have not occurred to-date and are not expected from future Goldstrike Mine discharges, if they occur. Based on projected ground water drawdown at the end of mining and 100 years postmining, baseflow impacts to the Humboldt River directly from Goldstrike Mine dewatering are not anticipated.

It is conceivable that if Barrick discharges to the river in wet years, a very small portion of the annual evaporation from the Humboldt Sink may be accounted for by the discharge contributions. As a result, temporarily greater water depths and extent are possible at the sink; in high water years, this additional water could contribute to spillover into the Carson Sink. Impacts from these conditions would not be expected to be frequent or especially detrimental since they have occurred historically, because there are substantial withdrawals from the river upstream of the sinks.

Barrick's outfall discharges recorded between September 1997 and February 1999 have been within permit limitations. Provided that the mine discharges are in accordance with the permit limitations, impacts to water quality in the river are not anticipated. On an average annual basis, the mine discharge represents a load increase in total dissolved solids, boron, copper, fluoride, and zinc compared with Humboldt River premine conditions. The loads from continued Goldstrike Mine discharge would likely increase total dissolved solids, boron, and fluoride loads in the Humboldt Sink over the mine discharge period; however, the relative magnitudes of these potential increases do not appear to be substantial. Nevertheless, depending on concentrations in the Humboldt Sink, parameter solubilities, and other physical and biological factors, these increased loads to the sink potentially could increase concentrations in the sink wetlands.

Riparian Vegetation

Mine-induced drawdown from Barrick's dewatering could affect 137 acres of the 662 acres of riparian vegetation located within the 10-foot drawdown area. Of these, approximately 135 acres occur in Boulder and Bell creeks (Rock Creek Watershed), 1 acre occurs in Welches Creek (Rock Creek Watershed), and 1 acre associated with Soap Creek (Maggie Creek Watershed). Approximately 13 acres of wetland vegetation associated with isolated seeps and springs also could be affected. Therefore, a total of approximately 150 acres of riparian/wetland vegetation would potentially be affected by mine-induced drawdown.

Previous Goldstrike Mine discharges to the Humboldt River generally did not affect riparian vegetation since the flows were within the natural range of historic flows; minor fluctuations in the water level during this period likely had minimal effects on the extent of riparian and wetland vegetation along the river. Future discharges, if they occur, may affect riparian and wetland vegetation since channel configuration, depth, and sinuosity may change as a result of the increased water level during low-flow periods.

Terrestrial Wildlife

Mine dewatering could reduce the amount and extent of surface water and associated riparian habitats of springs, seeps, and perennial stream reaches within the study area that are used by a variety of terrestrial wildlife species. Potential reduction or loss of available water could affect wildlife resources by: (1) a decrease in available water for consumption; (2) loss of breeding, foraging, and cover habitats; (3) reduction in regional carrying capacity; (4) displacement and loss of animals; (5) decrease in biological diversity; (6) possible genetic isolation; (7) reduction in prey availability; and (8) possible long-term impact to population numbers, depending upon the species and relative habitat quality. Incremental habitat loss could affect big game, upland game birds, waterfowl, shorebirds, raptors, songbirds, nongame mammals, reptiles, and amphibians. Ground water drawdown could affect 150 acres of riparian habitat and wetlands used by terrestrial wildlife species. Available water and associated riparian vegetation would be affected in mule deer summer and transitional ranges, resulting in reduced carrying capacity and displaced animals. Pronghorn summer and transitional ranges also would be affected. In addition, increased leaching of minerals and salts into the soils of Boulder Valley would occur as mine dewatering ceases, modifying the upland vegetation into a more salt-tolerant plant community. Over the long term the pit lake is predicted to have a near neutral pH. However, there is a small potential (5 percent probability) that the lake could be acidic during the early years with the pH gradually increasing over time to near neutral conditions. Long-term exposure to future pit lake water quality is not anticipated to cause acute impacts to wildlife, chronic impacts from reduced pH are unknown.

Discharges to the Humboldt River could result in a short-term increase in available water and support of riparian habitats. The support and development of additional backwater or slough areas would provide nesting, brooding, foraging, and resting habitat. Additional open water may occur in the winter period, which would provide increased foraging opportunities. Potential habitat loss (e.g., nesting or foraging areas) from seasonal flooding along the river during high-flow periods (spring and early summer) would be offset by the creation and enhancement of other wetland areas along the river corridor that currently do not receive sufficient water for optimal wildlife habitat. Increased flows into the Humboldt Sink would improve breeding, foraging, and resting opportunities for resident and migratory wildlife species in the short term.

Potential risks to wildlife from additional mine discharges and possible contaminant loading in the Humboldt Sink would likely be similar to those assessed for premining conditions. However, a number of variables exists that make it difficult to predict future conditions. These variables include the dynamic system of the sink, upstream water demands and fluctuating water levels, bioaccumulation factors of certain constituents of concern (e.g., boron, selenium, mercury), and a number of environmental factors.

Aquatic Resources

Goldstrike Mine dewatering could reduce water levels or flows in some springs and perennial reaches within the Boulder Creek and upper Antelope Creek drainages. Drawdown is not expected to affect flows in other streams. The effect of decreased perennial streamflows or water levels on aquatic resources would be a reduction of aquatic habitat that supports native fish species, periphyton, and macroinvertebrate communities. Habitat reductions would likely result in decreased numbers in these communities. If stream segments become dry as a result of reduced flows, aquatic habitat and associated biota would be eliminated. Potential changes in water quality as a result of flow reductions would not likely affect biotic communities, since biota are tolerant of fluctuating temperatures and other parameters.

The effects of flow increases on aquatic communities in the Humboldt River would include both beneficial and adverse impacts. Discharges to the river would result in a beneficial impact of increased habitat for fish, macroinvertebrates, and periphyton. However, the possible reduction of shallow pools and braided channels could adversely affect the development of young fish. Increased flows are not expected to affect fish composition. Fish dispersal patterns are expected to be similar to present conditions. Overall, the effects of increased flows on water quality conditions, such as sediment levels, temperature, and metal concentrations, would be minor.

Threatened, Endangered, Candidate, and Sensitive Species

Mine dewatering could result in reduction of riparian habitats that may be used by the following terrestrial wildlife species: Preble's shrew, six sensitive bat species, bald eagle, golden eagle, Swainson's hawk, ferruginous hawk, northern goshawk, burrowing owl, sage grouse, white-faced ibis, black tern, and Nevada viceroy. The potential reduction in perennial flows or water levels in springs could reduce the amount of riparian and wetland habitats, which may be used by certain species for cover, foraging, breeding, or other biological requirements. The incremental loss of potential foraging areas would not be considered significant for Federally-listed species (i.e., the bald eagle), based on the incidental use by migrating and wintering eagles of the area potentially affected by the project.

Over the long term the pit lake is predicted to have a near neutral pH. However, there is a small potential (5 percent probability) that the lake could be acidic during the early years with the pH gradually increasing over time to near neutral conditions. Long-term exposure to future pit lake water quality by species, such as the bald eagle or bat species, would not cause acute effects from either increased metals or reduced water pH (5 to 6); potential chronic effects from reduced pH levels are more of an unknown. However, since it is expected that future aquatic communities would likely remain low and would not represent a substantial food source for avian or mammalian wildlife, the incidence of potential foraging in the future pit lake by species of special concern would be expected to be incidental and sporadic.

Discharges to the Humboldt River would result in a short-term increase in available water for many of the special status species identified for the study area. Increased flows in the Humboldt River could improve and enhance the riparian community, which could be used by these species for breeding, foraging, resting, and cover. Increased annual flows may result in a greater amount of open water areas during the winter season, which would increase available foraging areas for wintering bald eagles. The potential impacts to species occurring in the Humboldt Sink area from chemical constituents of concern would be the same as discussed for terrestrial wildlife.

The potential short- and long-term effects to special status species would parallel those discussed for general wildlife resources. Possible effects from increased water discharges to the Humboldt River and Humboldt Sink would be the same as discussed for terrestrial wildlife.

The potential effects of drawdown on aquatic species would be limited to springsnails. Water level reductions in springs located in upper Antelope Creek could decrease habitat for springsnails. Drawdown would not affect one known spring inhabited by springsnails in upper Willow Creek. Drawdown from the Goldstrike Mine is not predicted to affect flows in the Maggie Creek and Rock Creek subbasins, which support existing populations of the Lahontan cutthroat trout and potential habitat and existing populations of the California floater ***and the Columbia spotted frog***.

Grazing Management

Impacts that may occur as a result of ground water drawdown from Barrick's water management operations include reduced flow or complete cessation of flow in springs and other water sources. The long-term loss of water sources would result in the reduction or loss of permitted active grazing use within an allotment if alternative water sources are not present within the vicinity of the affected water sources or if lost water sources are not mitigated. The reduced flow or change in a water source from perennial to intermittent would result in a reduction in season of use, which also would affect permitted active grazing use. Drawdown impacts could be localized to water sources within one or several pastures within an allotment. The loss of the majority or all of the water sources within these pastures would likely affect livestock distribution, forage utilization, and grazing management operations.

Some of the water sources (i.e., water-related range improvements and natural perennial water sources) in the Twenty-five and T Lazy S allotments potentially could be affected by Goldstrike Mine drawdown. In the Twenty-five allotment, approximately 30 percent of the natural perennial water sources within the Boulder Creek pasture could potentially be affected by Goldstrike Mine ground water drawdown. Approximately 25 percent of the water related range improvements and approximately 10 percent of the natural perennial water sources in the T Lazy S allotment could be affected by Goldstrike Mine drawdown. The potential long-term loss of these water sources may result in the long-term loss of permitted active grazing use or reduced forage utilization.

During the period of mine dewatering discharge, slightly increased water levels within the Humboldt River floodplain would likely increase the areal extent of herbaceous wetlands immediately adjacent to the river channel. Forage production and the carrying capacity of these narrow areas also would likely increase temporarily. Discharge waters reaching the Humboldt and Carson sinks would not affect grazing management since livestock grazing is not allowed within these areas.

Socioeconomics

Barrick's mine dewatering and water management operations have provided water for approximately 8,000 additional acres of irrigated hay fields with resulting hay production. In the unlikely event that Barrick were to discharge mine dewatering water to the Humboldt River, there could be a minor increase in available irrigation water associated with additional storage in Rye Patch Reservoir. Mine-induced ground water drawdown from Barrick's dewatering could result in some reduction in water availability for cattle grazing and a slight reduction in hunting and fishing opportunities associated with a reduction in surface water resources.

Alternatives

As ELLCO and Barrick have withdrawn their ROW grant amendment application for a buried water pipeline, which was the Proposed Action addressed in the Draft Supplemental EIS, there is no longer a Proposed Action upon which the BLM will make a decision. Consequently, there are no alternatives to the Proposed Action considered in the Final Supplemental EIS. The Supplemental EIS evaluates the direct, indirect, and cumulative environmental impacts of Barrick's ongoing water management operations.

Impact Summary Table

Table S-1 summarizes the impacts and monitoring and mitigation measures associated with the:

- Betze Project, as analyzed in the Betze Project Final EIS (1991b) and the associated Record of Decision (BLM 1991d).
- Meikle Mine Development EA (BLM 1993a) and the associated Finding of No Significant Impact and Decision Record (BLM 1994c), and the Biological Assessment of Barrick's Dewatering Operations (BLM 1994b).
- Continued Goldstrike Mine dewatering and water management operations, including possible discharge to the Humboldt River, as analyzed in this Supplemental EIS.

The table enables the impacts and the associated monitoring/mitigation measures to be tracked between the Final EIS (BLM 1991b), the Meikle Mine EA (BLM 1993a), and this ***Final Supplemental EIS***.

The impact analysis in this ***Final Supplemental EIS*** reflects the monitoring programs and mitigation commitments specified in the Betze Project ROD (BLM 1991d). Additional monitoring and mitigation measures for this ***Supplemental EIS*** are associated mainly with the dewatering and water management activities. Where applicable, these additional monitoring and mitigation measures tier from relevant monitoring/mitigation identified in the Final EIS.

The Draft Supplemental EIS identified possible mitigation measures for the Betze Project. Comments on the Draft Supplemental EIS addressed some of the possible mitigation measures and suggested additional possible measures. The BLM has considered the Draft Supplemental EIS comments and has engaged in discussions or consultation with the USFWS, Nevada Division of Wildlife, Native Americans, and Barrick to develop final mitigation for the Betze Project. The mitigation for the Betze Project Final Supplemental EIS comprises the Mitigation Plan included as Appendix A to this Final Supplemental EIS, and the Upper Willow Creek Habitat Enhancement Plan included as Appendix B to this Final Supplemental EIS. This mitigation was included in the Biological Assessment/Evaluation submitted to the USFWS as a part of the BLM's Section 7 consultation and is incorporated by reference into the USFWS concurrence memorandum (dated July 15, 2002), which is included in Appendix C of this Final Supplemental EIS.

Table S-1
Summary of Dewatering and Water Management Impacts and Monitoring/Mitigation

Betze Project EIS (1991)		Meikle Mine EA/BA (1994)		Betze Project Supplemental EIS	
Impacts	Monitoring/Mitigation	Impacts	Monitoring/Mitigation	Impacts	Monitoring/ Mitigation
GEOLOGY					
• No anticipated impact.	• None	• No anticipated impact.	• None	• Two sinkholes have formed in response to mine dewatering; areas underlain by carbonate rock located northwest and southeast of the Betze-Post Pit could be susceptible to future sinkhole development.	• Reporting of any suspected subsidence features to BLM. • Develop and implement site-specific remedial measures as approved by the BLM.
WATER RESOURCES AND GEOCHEMISTRY					
Dewatering and Drawdown					
• Dewatering expected to continue through 2000; target elevation 4,160 feet, with rates up to 29,300 gpm.	• NA	• Decision authorized continuation of dewatering through 2001; dewatering to the target elevation authorized by the Betze EIS.	• Significant modifications of the Plan of Operations for the Meikle Project affecting federal lands must be reviewed and approved by the BLM prior to implementation.	• Dewatering expected to continue until 2010; target elevation 3,576 feet, with rates up to 69,000 gpm.	• NA
• Drawdown: Area projected to experience ≥10 feet of drawdown would extend up to 6 miles from pit at end of mining (year 2000), and continue to expand (up to 10 miles from the pit) up to year 2030 and then start to contract.	• Monitoring ground water levels and water quality, and flow and water quality at surface water stations on a monthly basis; monitoring plan reviewed annually by the BLM to determine necessary changes. • Barrick would continue monitoring for a period extending up to 30 years after completion of mining. Monitoring after this period would be funded by a Long-Term Monitoring Fund.	• Area projected to experience >10 feet of drawdown would expand up to 17 miles approximately 30 years after mining (see Figure D-11) followed by recovery to within 45 feet approximately 100 years postmining.	• Expand monitoring network (surface and ground water) between the mine and any LCT habitat, in consultation with BLM and the Nevada State Engineer. • BLM may require additional monitoring as necessary to monitor impacts to LCT or other sensitive resources.[1] • Submittal of all monitoring reports to BLM, quarterly. • Barrick to install and operate reinjection wells, if necessary, to prevent adverse impacts to LCT waters.[1] • If no reasonable or prudent alternatives exist to mitigate impacts to endangered or threatened species, BLM may direct Barrick to cease mining.[1]	• Drawdown: Area projected to experience ≥10 feet of drawdown would extend up to 12 miles from pit at end of mining (year 2010), and continue to expand (up to 15 miles from pit) until 100 years postmining and then start to contract.	• ***Continue ground water monitoring program, which has been expanded since the Betze EIS.*** • ***See impacts to seeps and springs and streams below for monitoring and mitigation associated with ground-water-dependent resources.***

Table S-1 (Continued)

Betze Project EIS (1991)		Meikle Mine EA/BA (1994)		Betze Project Supplemental EIS	
Impacts	Monitoring/Mitigation	Impacts	Monitoring/Mitigation	Impacts	Monitoring/ Mitigation
Seeps, Springs, and Perennial Streams					
• Seeps and Springs: 10-foot drawdown contour projected to encompass 57 springs by end of mining (2000), and 111 seeps and springs by 2030; most of these were expected to show reduced flow or dry up (if hydraulically connected to the regional system).	• Monitoring of stream segments, seeps, and springs (annually), and some stream sites (monthly) and providing results to the BLM. • Establishment of Wetland Mitigation Fund ($660,000) available to the BLM for the protection and or enhancement of riparian and wetlands to mitigate drawdown impacts.	• Seeps and springs could be impacted from drawdown (number not estimated).	• None	• Seeps and Springs: At the end of 1998, several spring and seep sites showed reduced flow or dried up. The projected 10-foot drawdown contour is predicted to encompass 70 spring sites; 44 of these are located in areas where surface waters could be impacted, 26 are located in areas where impacts are less likely.	• ***Continue annual seep and spring monitoring program, which has been expanded since the Betze EIS, until 2030. After 2030, the Long-term Monitoring Fund would pay for monitoring; Barrick has added an additional $300,000 to this fund.*** • ***Improve up to 15 springs within 3-year period, in coordination with BLM and NDOW.***
• Streams: The lower perennial reaches of Brush, Bell, and Boulder creeks were expected to have reduced flows.	• Provide funds for the acquisition and maintenance of alternative water sources (e.g., guzzlers, cisterns, purchase of water rights, etc.) (maximum of $50,000).	• Additional impacts to perennial flows from drawdown not identified.	• None	• Streams: Similar to the original EIS, except that drawdown could reduce flows in Antelope Creek and tributaries .	• ***Continue surface water monitoring program, with the addition of station ANT-1a on Antelope Creek.*** • ***Riparian habitat mitigation associated with impacts to streams is provided in the Upper Willow Creek Habitat Enhancement Plan.***
Water Rights					
• Reduction in ground water levels in ground water supply wells during dewatering and recovery.	• If monitoring demonstrates impairment of water rights, the Authorizing Officer may, in consultation with the Nevada State Engineer, require Barrick to provide alternative water sources or assistance to mitigate or eliminate such impacts.	• Impacts to water rights associated with drawdown not identified.	• None	• Additional water rights (surface and ground water) could be affected by mine-induced drawdown.	• Barrick would continue to monitor surface and ground water to determine the extent of drawdown as required by the State Engineer. Adverse impacts to water rights (surface water or ground water) would be mitigated as required by the Nevada Division of Water Resources.
Ground Water Mounding					
• Mounding would occur in Boulder Valley due to irrigation infiltration.	• None	• Mounding predicted by modeling; impacts associated with ground water mounding not identified.	• None.	• Ground water mounding from infiltration of excess mine dewatering water has been more extensive than originally estimated; mounding reached a maximum in 1996 and is predicted to gradually subside in the future.	• None

Table S-1 (Continued)

Betze Project EIS (1991)		Meikle Mine EA/BA (1994)		Betze Project Supplemental EIS	
Impacts	**Monitoring/Mitigation**	**Impacts**	**Monitoring/Mitigation**	**Impacts**	**Monitoring/ Mitigation**
Pit Lake					
• Lake predicted to have neutral pH; potential for elevated arsenic levels.	• Quarterly monitoring of pit water quality for arsenic and other identified constituents of concern until at least 2030,and thereafter if necessary; monitoring activities after 2030 would be funded by the Long-Term Monitoring Fund. • Funding of research of issues related to postmining pit water quality at $50,000 per year for 10 years.	• No additional evaluation.	• None	• Updated predictions indicate lake is likely to have near-neutral pH with antimony concentrations ranging from 0.04-0.06 mg/L; TDS and sulfate are predicted to gradually increase over time. Slight possibility lake may be acidic in early (up to 26) years with associated elevated metals concentrations. • Pit lake predicted to act as a long-term hydraulic sink; outflow to ground water is not expected. Arsenic concentrations predicted to be at or below detection limits.	• None
Humboldt River Flow					
• No anticipated impacts.	• Barrick is providing $1,000,000 for USGS Humboldt River study.	• No anticipated impact; direct discharge not proposed.	• None	• Excess mine dewatering water was discharged to the Humboldt River from September 1997 through February 1999 at rates ranging from 22,000 to 50,000 gpm. Flows measured in the river were within historic ranges during the discharge period. • Barrick's current plans indicate that future discharges are unlikely; however, Barrick is permitted to discharge in the future up to 70,000 gpm.	• None • Monitoring of the river channel in the vicinity of the discharge outfall, prior to, during, and after the discharge period, ***as required by Barrick's NPDES permit.*** • If impacts are identified, Barrick would be responsible for mitigating these impacts with approval from applicable Federal and state agencies.

Table S-1 (Continued)

Betze Project EIS (1991)		Meikle Mine EA/BA (1994)		Betze Project Supplemental EIS	
Impacts	Monitoring/Mitigation	Impacts	Monitoring/Mitigation	Impacts	Monitoring/ Mitigation
Humboldt River Water Quality					
• No anticipated impact.	• None	• No anticipated impact; direct discharge not proposed.	• None	• Discharges were within permit limitations; discharges would likely result in a relatively small incremental increase in TDS, arsenic, boron, and fluoride loads in the Humboldt Sink.	• ***Contribute $25,000 to USFWS for biological monitoring during years with Barrick discharge to the Humboldt River.***
VEGETATION (INCLUDING RIPARIAN)					
• Dewatering activities could potentially affect up to 330 acres of riparian vegetation.	• Provide funds for protection and enhancement of riparian and wetland vegetation (maximum contribution of $660,000).	• No dewatering impacts identified.	• None	• Ground water drawdown could affect 136 acres of riparian vegetation in the Boulder Creek drainage and 1 acre in the Maggie Creek drainage. In addition, ground water could affect 13 acres of wetland vegetation associated with isolated seeps and springs.	• ***Improvement of 635 acres of riparian habitat and associated uplands as part of Upper Willow Creek Habitat Enhancement Plan*** (also being implemented for cumulative effects mitigation).
	• Provide funds for post-dewatering revegetation of riparian and wetlands with seedings of container plants (maximum of $40,000).			• Approximately 13 acres of wetlands associated with 44 seeps and springs could be affected by flow reductions.	• ***Improve up to 15 springs within 3-year period, in coordination with BLM and NDOW.*** • ***Riparian habitat mitigation associated with impacts to streams is provided in the Upper Willow Creek Habitat Enhancement Plan.***
• Dewatering discharges could increase the amount of riparian vegetation in the irrigation area and an unnamed drainage.	• Monitor riparian and wetlands until at least 2030. • Provide funds for the acquisition and maintenance of alternative water sources (e.g., guzzlers, cisterns, purchase of water rights, etc.) (maximum of $50,000).			• Increased discharge to Humboldt River could result in additional support of riparian vegetation and short-term expansion of riparian community.	• None

Table S-1 (Continued)

Betze Project EIS (1991)		Meikle Mine EA/BA (1994)		Betze Project Supplemental EIS	
Impacts	Monitoring/Mitigation	Impacts	Monitoring/Mitigation	Impacts	Monitoring/ Mitigation
TERRESTRIAL WILDLIFE					
Dewatering and Drawdown					
				• Minor restrictions to small animal movement from water conveyance canal.	• None
• Dewatering could result in reduction or loss of available surface water for wildlife use in an estimated 111 seeps and springs by 2030.	• Monitor springs, seeps, riparian areas, and wetlands until at least 2030 (up to $250,000).	• Continued availability of water at the TS Ranch Reservoir for wildlife use.	• None	• Approximately 44 springs, and associated wildlife habitat, are located in areas where surface waters could be affected in the long term.	• None
• Dewatering could result in reduction in available water in the lower perennial reaches of Brush, Bell, and Boulder creeks.	• Variety of monitoring points along perennial drainages.			• Potential long-term impacts to perennial stream reaches and associated wildlife would be similar to the Betze FEIS; however drawdown could reduce flows in Antelope Creek and its tributaries.	• ***Improve 635 acres of riparian habitat and associated uplands as part of Upper Willow Creek Habitat Enhancement Plan (also being implemented for cumulative effects mitigation).***
• Dewatering activities could potentially affect up to 330 acres of riparian habitat.	• Fund protection and enhancement of riparian and wetlands areas (maximum contributed $660,000).			• Ground water drawdown could potentially affect 136 acres of riparian habitat in the Boulder Creek drainage and 1 acre in the Maggie Creek drainage.	• ***Improve 635 acres of riparian habitat and associated uplands as part of Upper Willow Creek Habitat Enhancement Plan, which would provide off-site habitat enhancement for terrestrial wildlife species*** (also being implemented for cumulative effects mitigation).
• Overall impacts to terrestrial wildlife resources from ground water drawdown activities could include the overall long-term reduction in available surface water; riparian and mesic vegetation; wetland areas; possible loss or reduction in cover, breeding sites, and foraging areas; animal displacement and incremental habitat fragmentation; and possible reduction in the associated habitat carrying capacity of affected areas.	• Fund post-dewatering revegetation of riparian and wetlands with seedlings or container plants (maximum of $40,000). • Fund the acquisition and maintenance of alternative water sources (guzzlers, cisterns, etc.) (up to $50,000). May include (but not be limited to) purchase of water rights at off-site locations or acquisition of wildlife easements to water sources.			• Ground water drawdown could affect 13 acres of wetland habitat and wildlife associated with perennial reaches and 44 seeps and springs. • Reduction in mesic areas. • Possible decreased riparian plant vigor or loss of vegetative cover. • Possible reduction or loss of cover, breeding sites, and foraging areas.	• ***Improve up to 15 springs within 3-year period, in coordination with BLM and NDOW.*** • ***Improve overall habitat conditions as part of Upper Willow Creek Habitat Enhancement Plan (also being implemented for cumulative effects mitigation).***

Table S-1 (Continued)

Betze Project EIS (1991)		Meikle Mine EA/BA (1994)		Betze Project Supplemental EIS	
Impacts	Monitoring/Mitigation	Impacts	Monitoring/Mitigation	Impacts	Monitoring/ Mitigation
	• Long-term Monitoring and Mitigation Fund of $1,000,000 for review, monitoring, and mitigation of effects not specifically identified in EIS and not covered by reclamation plan.			• Possible increases in surface water temperature. • Reduced carrying capacity in habitats affected by loss of available water or riparian vegetation. • Possible reduction in certain animal populations that depend on affected springs, wetlands, or stream reaches. • Reduction in overall biodiversity. • Animal displacement and incremental habitat fragmentation. • Possible genetic isolation of localized, less mobile species dependent on affected riparian sites. • Reduction in available water, riparian habitats, mesic areas, and potential nesting and brooding habitats for upland game birds.	
• Potential increase in mule deer mortalities from shifts in mule deer migration patterns.	• Fund mule deer habitat improvements, in consultation with the BLM and NDOW (maximum contribution $125,000). • Funds for the acquisition and maintenance of alternative sources of water (e.g., guzzlers cisterns, purchase of water rights, etc.) (maximum contribution of $50,000).			• Reduction or loss of water in mule deer summer and transitional ranges, resulting in reduced carrying capacity and animal displacement. • Reduction or loss of water in pronghorn summer and transitional ranges, resulting in reduced carrying capacity and animal displacement.	• Improve overall habitat conditions ***as part of Upper Willow Creek Habitat Enhancement Plan*** (also being implemented for cumulative effects mitigation).
• Potential loss of raptor breeding habitat (e.g., red-tailed hawk), based on habitat loss and reduction of prey abundance.	• Monitoring and mitigation of riparian habitats, wetlands, and perennial streams, as discussed above.			• Potential reduction in prey base for predators, such as raptors, from reduced water levels and riparian habitats.	• None

Table S-1 (Continued)

Betze Project EIS (1991)		Meikle Mine EA/BA (1994)		Betze Project Supplemental EIS	
Impacts	Monitoring/Mitigation	Impacts	Monitoring/Mitigation	Impacts	Monitoring/ Mitigation
• No anticipated impacts.	• None			• Gradual decrease in shorebirds and waterfowl in Boulder Valley, as surface water levels return to pre-mining levels and habitats return to upland communities.	• None
• No anticipated impacts.	• None			• As mine dewatering ends and soils dry in Boulder Valley, increased leaching of minerals and salts into the soil surface and subsurface layers, modifying associated plant communities.	• None
• Discharge of water into the unnamed drainage that flows into the TS Ranch Reservoir could change the amount, character, and duration of wildlife habitat along the unnamed drainage, around the reservoir, and in irrigated areas in Boulder Valley.	• Monitoring and mitigation of riparian habitats, wetlands, and perennial streams. • Monitor creek channels and mitigate with channel armoring, as necessary.			• NA	• NA
Pit Lake					
• Lake predicted to have neutral pH; potential for elevated arsenic levels.	• Monitor post-mining pit lake water quality quarterly until at least 2030. • Fund research on pit lake water quality ($50,000/year up to 10 years).	• NA	• NA	• Slight potential for short-term chronic impacts due to low pH.	• ***Continue to monitor post-mining pit lake water quality quarterly until at least 2030.***
Humboldt River Flow					
		• NA	• NA	• Increased flows in Humboldt River would result in improved maintenance and establishment of riparian vegetation in the short term. • Increased river flows could improve water quality and quantity and riparian habitat for wildlife species. • Increased river flows could result in more open water during low-flow periods.	• None

Table S-1 (Continued)

Betze Project EIS (1991)		Meikle Mine EA/BA (1994)		Betze Project Supplemental EIS	
Impacts	Monitoring/Mitigation	Impacts	Monitoring/Mitigation	Impacts	Monitoring/ Mitigation
				• Greater flows and water depths in the river and Humboldt Sink could limit use by breeding and foraging individuals, although other areas should become established. • Increased flows in the Humboldt Sink would provide additional breeding, foraging, and resting areas for waterfowl and shorebirds. • Increased flows in the Humboldt Sink would increase relative prey availability for area predators.	
Humboldt River Water Quality					
		• NA	• NA	• Given existing data, additional mine discharges would not likely pose additional risks to wildlife in the Humboldt Sink beyond premining conditions.	• ***Contribute $25,000 to USFWS for biological monitoring during years with Barrick discharge to the Humboldt River.***
AQUATIC RESOURCES					
Dewatering and Drawdown					
• Dewatering activities would reduce habitat for aquatic biota in Boulder Creek drainage.	• None	• No dewatering impacts identified.	• Barrick shall prevent the introduction of nonnative aquatic species into TS Ranch Reservoir and other water bodies subject to their ownership or control.	• Dewatering activities could reduce habitat for native fish and other aquatic biota in Boulder Creek and upper Antelope Creek drainages.	• Continued monitoring of flows in perennial reaches of Boulder Creek and upper Antelope Creek drainages ***with the addition of station ANT-1a on Antelope Creek.*** • Off-site enhancement involving improvements in land use practices in the Squaw Valley Allotment ***as part of the Upper Willow Creek Habitat Enhancement Plan*** (also being implemented for cumulative effects mitigation).
Humboldt River Flow					
		• NA	• NA	• Dewatering discharges into Humboldt River would increase habitat for fish and other aquatic biota.	• None

Table S-1 (Continued)

Betze Project EIS (1991)		Meikle Mine EA/BA (1994)		Betze Project Supplemental EIS	
Impacts	Monitoring/Mitigation	Impacts	Monitoring/Mitigation	Impacts	Monitoring/ Mitigation
TERRESTRIAL SPECIAL STATUS SPECIES					
Dewatering and Drawdown					
• Potential impacts to species associated with water sources and riparian or wetland vegetation could be affected by loss of seeps, springs, and perennial stream reaches.	• Monitor springs, seeps, riparian areas, and wetlands until at least 2030 (up to $250,000). • Variety of monitoring points along perennial drainages. • Monitor creek channels and mitigate with channel armoring, as necessary. • Fund protection and enhancement of riparian and wetlands areas (maximum contributed $660,000). • Fund post-dewatering revegetation of riparian and wetlands with seedlings or container plants (maximum of $40,000). • Fund the acquisition and maintenance of alternative water sources (guzzlers, cisterns, etc.) (up to $50,000). May include (but not limited to) purchase of water rights at off-site locations or acquisition of wildlife easements to water sources. • Long-term mitigation funds of $1,000,000 for review, monitoring, and mitigation of effects not specifically identified in EIS and not covered by reclamation plan.	• No dewatering impacts on terrestrial special status species were identified.	• Additional mitigation could be implemented for terrestrial species associated with riparian areas and streams if a review of ground water data indicates potential effects on surface flows.	• Potential impacts to special status species from incremental loss of available surface water, riparian vegetation, or wetlands.	• ***Continue to monitor seeps, springs, riparian areas, and wetlands until 2030. After 2030, the Long-term Monitoring Fund would pay for monitoring; Barrick has added an additional $300,000 to this fund.*** • ***Improve up to 15 springs within 3-year period, in coordination with BLM and NDOW.*** • Improve overall habitat conditions for special status species that utilize riparian communities and aquatic systems ***resulting from the Upper Willow Creek Habitat Enhancement Plan*** (also being implemented for cumulative effects mitigation).
Pit Lake					
• See Terrestrial Wildlife.	• See Terrestrial Wildlife.			• Note: Potential impacts to wildlife from pit lake water quality would be the same for all species that use these areas.	• See Terrestrial Wildlife.

Table S-1 (Continued)

Betze Project EIS (1991)		Meikle Mine EA/BA (1994)		Betze Project Supplemental EIS	
Impacts	**Monitoring/Mitigation**	**Impacts**	**Monitoring/Mitigation**	**Impacts**	**Monitoring/ Mitigation**
Humboldt River Flow					
• See Terrestrial Wildlife.	• See Terrestrial Wildlife.			• Note: Increased flows along the Humboldt River would result in short-term increase in water and riparian vegetation.	• None
Humboldt River Water Quality					
• See Terrestrial Wildlife.	• See Terrestrial Wildlife.			• Note: Potential impacts to wildlife from increased loading of metals in Humboldt Sink would be the same for all species that use these areas.	• ***Contribute $25,000 to USFWS for biological monitoring during years with Barrick discharge to the Humboldt River.***
Preble's Shrew (if present)					
• See general discussion for Terrestrial Special Status Species above.	• See general discussion for Terrestrial Special Status Species above.			• Long-term reduction in potential habitat. Short-term increase in potential habitat along Humboldt River. Potential exposure to constituents of concern at Humboldt Sink.	• ***Improve up to 15 springs within 3-year period, in coordination with BLM and NDOW.*** • ***Improve overall habitat conditions as part of Upper Willow Creek Habitat Enhancement Plan (also being implemented for cumulative effects mitigation).***
Long-eared Myotis, Small-footed Myotis, Spotted Bat					
• See general discussion for Terrestrial Special Status Species above.	• See general discussion for Terrestrial Special Status Species above.			• Long-term reduction in potential foraging habitat. Short-term increase in potential foraging habitat along Humboldt River. Potential exposure to future pit lake water and constituents of concern at Humboldt Sink.	• ***Improve up to 15 springs within 3-year period, in coordination with BLM and NDOW.*** • ***Improve overall habitat conditions as part of Upper Willow Creek Habitat Enhancement Plan (also being implemented for cumulative effects mitigation).***
Long-legged Myotis, Fringed Myotis, Townsend's Big-eared Bat					
• See general discussion for Terrestrial Special Status Species above.	• See general discussion for Terrestrial Special Status Species above.			• Same as for other three bat species discussed above.	• Same as for other three bat species discussed above.

Table S-1 (Continued)

Betze Project EIS (1991)		Meikle Mine EA/BA (1994)		Betze Project Supplemental EIS	
Impacts	Monitoring/Mitigation	Impacts	Monitoring/Mitigation	Impacts	Monitoring/ Mitigation
Bald Eagle, Golden Eagle, Swainson's Hawk, Ferruginous Hawk					
• See general discussion for Terrestrial Special Status Species above.	• See general discussion for Terrestrial Special Status Species above.			• Long-term, incremental reduction in: Bald Eagle: potential foraging habitat for wintering and migrating eagles. Golden Eagle: potential foraging habitat and individual roost sites in riparian zones. Swainson's Hawk: potential foraging and nesting habitat. Ferruginous Hawk: potential foraging habitat. All Four Raptor Species: • Short-term increase in potential foraging habitat along Humboldt River. Potential exposure to future pit lake water and constituents of concern at Humboldt Sink.	• *Improve up to 15 springs within 3-year period, in coordination with BLM and NDOW.* • *Improve overall habitat conditions as part of Upper Willow Creek Habitat Enhancement Plan (also being implemented for cumulative effects mitigation).*
Northern Goshawk					
• See general discussion for Terrestrial Special Status Species above.	• See general discussion for Terrestrial Special Status Species above.			• Long-term, incremental reduction in potential foraging and nesting habitat. Short-term increase in potential foraging habitat along Humboldt River for wintering birds. Potential exposure to future pit lake water and constituents of concern at Humboldt Sink.	• *Improve up to 15 springs within 3-year period, in coordination with BLM and NDOW.* • *Improve overall habitat conditions as part of Upper Willow Creek Habitat Enhancement Plan (also being implemented for cumulative effects mitigation).*
Burrowing Owl					
• See general discussion for Terrestrial Special Status Species above.	• See general discussion for Terrestrial Special Status Species above.			• Long-term, incremental reduction in potential foraging habitat. Short-term increase in potential foraging habitat along Humboldt River.	• *Improve up to 15 springs within 3-year period, in coordination with BLM and NDOW.* • *Improve overall habitat conditions as part of Upper Willow Creek Habitat Enhancement Plan (also being implemented for cumulative effects mitigation).*

Table S-1 (Continued)

Betze Project EIS (1991)		Meikle Mine EA/BA (1994)		Betze Project Supplemental EIS	
Impacts	Monitoring/Mitigation	Impacts	Monitoring/Mitigation	Impacts	Monitoring/ Mitigation
Sage Grouse					
• See general discussion for Terrestrial Special Status Species above.	• See general discussion for Terrestrial Special Status Species above. • Also, habitat improvement fund, as specified for Proposed Action. • Fund $50,000 for sage grouse mitigation.			• Potential reduction in riparian and mesic communities, affecting the amount of potential brooding and foraging habitats for sage grouse. Habitat effects could alter sage grouse distribution and possibly reduce regional grouse population.	• To improve off-site sage grouse habitat, ***contribute an additional $50,000 to fund habitat rehabilitation***. • ***Improve nesting and riparian habitat in the Upper Willow Creek drainage as part of the Upper Willow Creek Habitat Enhancement Plan*** (also being implemented for cumulative effects mitigation).
American White Pelican, Osprey					
• See general discussion for Terrestrial Special Status Species above.	• See general discussion for Terrestrial Special Status Species above.			• No impacts to lakes or reservoirs anticipated for both species. Short-term increase in potential foraging habitat along Humboldt River for osprey. Potential exposure to constituents of concern at Humboldt Sink for both species.	• ***Contribute $25,000 to USFWS for biological monitoring during years with Barrick discharge to the Humboldt River.***
White-Faced Ibis, Black Tern					
• See general discussion for Terrestrial Special Status Species above.	• See general discussion for Terrestrial Special Status Species above.			• Long-term, incremental reduction in potential foraging and nesting habitat. Short-term increase in potential foraging habitat along Humboldt River. Potential exposure to constituents of concern at Humboldt Sink.	• ***Improve up to 15 springs within 3-year period, in coordination with BLM and NDOW.*** • ***Improve 635 acres of riparian habitat and associated uplands as part of Upper Willow Creek Habitat Enhancement Plan (also being implemented for cumulative effects mitigation).*** • ***Contribute $25,000 to USFWS for biological monitoring during years with Barrick discharge to the Humboldt River.***
				• As mine dewatering ends and soils dry in Boulder Valley, increased leaching of minerals and salts into the soil surface and subsurface layers, modifying associated plant communities.	• None

Table S-1 (Continued)

Betze Project EIS (1991)		Meikle Mine EA/BA (1994)		Betze Project Supplemental EIS	
Impacts	Monitoring/Mitigation	Impacts	Monitoring/Mitigation	Impacts	Monitoring/ Mitigation
Nevada Viceroy					
• See general discussion for Terrestrial Special Status Species above.	• See general discussion for Terrestrial Special Status Species above.			• Possible effects to potential habitat for Nevada viceroy.	• ***Improve up to 15 springs within 3-year period, in coordination with BLM and NDOW.*** • ***Improve overall habitat conditions as part of Upper Willow Creek Habitat Enhancement Plan (also being implemented for cumulative effects mitigation).***
AQUATIC SPECIAL STATUS SPECIES					
• No effects on aquatic species were identified.	• None	• No effects on aquatic species were identified.	• Barrick shall expand their network of monitoring surface water elevations in streams inhabited by LCT. • Additional mitigation could be implemented for LCT, if a review of ground water data indicates effects on flows in streams inhabited by LCT.	• ***No effects on LCT, spotted frog, and California floater from Betze Project.*** • ***Potential flow reduction impacts on LCT and California floater due to cumulative mine dewatering.***	• ***Improve 20.5 miles of LCT habitat and restoration of former habitat as part of the Upper Willow Creek Habitat Enhancement Plan (also being implemented for cumulative effects mitigation).*** • ***Convey 1.5 cfs instream flow right in Rock Creek to NDOW and BLM.***
			• If monitoring data indicate that drawdown is expanding into streams inhabited by LCT, Barrick shall use reinjection wells to recharge the ground water system.	• Potential reductions in habitat and loss of individuals for springsnails in upper Antelope Creek and Squaw Creek.	• ***Contribute $50,000 for research grant to study springsnail relocation techniques.***

Table S-1 (Continued)

Betze Project EIS (1991)		Meikle Mine EA/BA (1994)		Betze Project Supplemental EIS	
Impacts	Monitoring/Mitigation	Impacts	Monitoring/Mitigation	Impacts	Monitoring/ Mitigation
GRAZING MANAGEMENT					
• Potential flow reductions in seeps and springs could result in a loss of 345 acres of grazing land.	• Provide funds for acquisition and maintenance of alternative water sources (e.g., guzzlers, cisterns, purchase water rights, etc.) (maximum of $50,000).			• Possible effects on water sources in the Twenty-five and T Lazy S allotments.	• Continued annual monitoring of flows and water levels in representative seeps and springs within drawdown area. • ***Barrick would continue to monitor surface and ground water to determine the extent of drawdown as required by the State Engineer. Adverse impacts to water rights (surface water or ground water) would be mitigated as required by the Nevada Division of Water Resources.***
SOCIOECONOMICS					
• No anticipated impact.	• None	• No anticipated impact.	• None	• In unlikely event of Humboldt River discharge, minor increase in available irrigation water. • Possible effects on grazing water sources. • Possible effects to hunting and fishing activities.	• None • See Grazing Management • None
NATIVE AMERICAN RELIGIOUS CONCERNS					
• No anticipated impact.	• None	• No anticipated impact.	• None	• No anticipated impact.	• Native American consultation has been conducted and completed.
CULTURAL RESOURCES					
• ***No anticipated impact.***	• *None*	• ***No anticipated impact.***	• *None*	• ***No effects from the Betze Project.*** • ***Potential flow reduction impacts on the Rock Creek TCP due to cumulative mine dewatering.***	• ***None.*** • ***Convey 1.5 cfs instream flow right in Rock Creek to NDOW and BLM.***

NA = Not applicable.

[1] These measures may no longer be enforceable as the land associated with the Meikle Mine is no longer administered by the BLM.

UNIT CONVERSION TABLE

From	To	Multiply By
Area		
acres	square feet	43,560
square miles	acres	640
Volume		
acre-feet	gallons	325,829
gallons	cubic feet	7.48
Flow		
cubic feet per second (cfs)	gallons per minute (gpm)	449
gpm	acre-feet per year	1.61
cfs	acre-feet per year	724
Concentration		
parts per million (ppm)	milligrams per liter (mg/L)	1
mg/L	micrograms per liter (µg/L)	1,000
Loads		
tons per day (tpd)	tons per year (tpy)	365
tpy	pounds per day	5.48

ACRONYMS AND ABBREVIATIONS

°F	Fahrenheit
µg/g	micrograms per gram
µg/L	micrograms per liter
ALNINC	*Alnus incana*
amsl	above mean sea level
ANFO	ammonium nitrate fuel oil
AUM	animal unit month
BLM	Bureau of Land Management
BVMP	Boulder Valley Monitoring Plan
bw	body weight
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
cfs	cubic feet per second
CIA	Cumulative Impact Analysis
CO	carbon monoxide
CTQ	Community Tolerance Quotient
EIS	environmental impact statement
ELLCO	Elko Land and Livestock Company
EPA	Environmental Protection Agency
ET	evapotranspiration
FFR	Fenced Federal Range
FLPMA	Federal Land Policy and Management Act of 1976
gpm	gallons per minute
H_2S	hydrogen sulfide
LCT	Lahonton cutthroat trout
LMC	Lower Maggie Creek
LOAEL	Lowest Observed Adverse Effects Levels
m^2	square meters
MCBMP	Maggie Creek Basin Monitoring Plan
MCWRP	Maggie Creek Watershed Restoration Project
mg/kg	milligrams/kilograms
mg/L	milligrams per liter
Na	sodium
NAAQS	National Ambient Air Quality Standards
NAC	Nevada Administrative Code
NaCl	sodium chloride
NDCNR	Nevada Department of Conservation and Natural Resources
NDEP	Nevada Department of Environmental Protection
NDOW	Nevada Division of Wildlife
NDWR	Nevada Department of Water Resources
NEPA	National Environmental Policy Act
NNHP	Nevada Natural Heritage Program

NO_2	oxides of nitrogen
NOAA	National Oceanographic and Atmospheric Administration
NOAEL	No Observed Adverse Effects Levels
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NRS	Nevada Revised Statute
NTU	nephelometric turbidity units
OHWM	ordinary high water mark
PM_{10}	particulate matter with an aerodynamic diameter of 10 microns or less
ROW	right-of-way
RTi	Riverside Technology, inc.
SAR	sodium adsorption ratio
SHPO	State Historic Preservation Officer
SO_2	sulfur dioxide
SO_4	sulfate
SOAP	South Operations Area Project
SOAPA	South Operations Area Project Amendment
TDS	total dissolved solids
TSS	total suspended solids
UIC	underground injection control (permit)
USCOE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VRM	Visual Resource Management
WMA	Wildlife Management Area

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APPENDIX B – UPPER WILLOW CREEK HABITAT ENHANCEMENT PLAN

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1.0 INTRODUCTION

This Final Supplemental Environmental Impact Statement (EIS) for the Betze Project contains:

- *Revisions to the Draft Supplemental EIS (Chapter 2.0).*
- *A record of the written comments received on the Draft Supplemental EIS and responses to the substantive comments (Chapter 3.0).*
- *The Betze Project Supplemental EIS Mitigation Plan (Appendix A), which outlines mitigation measures Barrick would implement to reduce or eliminate impacts. This mitigation plan was developed in coordination with the BLM, U.S. Fish and Wildlife Service, and the Nevada Division of Wildlife.*
- *Barrick's Upper Willow Creek Habitat Enhancement Plan (Appendix B), which is designed to provide improved habitat for a variety of terrestrial and aquatic species in advance of potential impacts identified in the Supplemental EIS.*
- *Results of the BLM's informal consultation with the U.S. Fish and Wildlife Service under Section 7 of the Endangered Species Act. The USFWS memorandum of concurrence that the Betze Project is not likely to adversely affect the Lahontan cutthroat trout or the bald eagle and their habitat is provided in Appendix C.*
- *Documentation of Native American consultation (Appendix D).*

The Betze Project Draft Supplemental EIS was distributed for public comment on September 15, 2000. The BLM held a public meeting to receive comments during the public comment period, which ended on November 14, 2000. None of the comments received during the public comment period required major changes or revisions in the analyses or conclusions presented in the Draft Supplemental EIS. The Draft Supplemental EIS has not been reprinted; therefore, this abbreviated Final Supplemental EIS must be read in conjunction with the Draft Supplemental EIS. Minor revisions to the text of the Draft Supplemental EIS are provided in Chapter 2.0 of this document.

2.0 EIS MODIFICATIONS AND CORRECTIONS

This chapter contains specific modifications and corrections to the Betze Project Draft Supplemental EIS. These revisions were made in response to:

- *Barrick's and ELLCO's withdrawal of the application to amend the existing right-of-way for a second water pipeline across public lands in Boulder Valley.*
- *Comments received during the public comment period.*

The text revisions are identified in Table 2-1. Where text has been added or modified, the new text appears in bold italic print. Revised tables and figures are presented in their entirety following Table 2-1.

Summary of Native American Consultation

The Draft Supplemental EIS (Section 5.9) described the BLM's conduct of Native American consultation relative to cumulative mine dewatering in the Carlin Trend. This consultation has been ongoing since October 1, 1998, and has included meetings, field trips, letters, and telephone communications.

The BLM has concluded Native American consultation for the Betze Project Supplemental EIS. The BLM held a final consultation meeting with the Western Shoshone on July 17, 2002 to discuss the Betze Project Supplemental EIS and associated mitigation. Meeting attendees included the BLM, Barrick, and lenders and representatives from the Te-Moak Tribal Council, Elko Band Council, Battle Mountain Band Council, South Fork Band Council, and other interested members of the Western Shoshone community. The comment period for consultation ended on August 16, 2002.

In response to Native American concerns, the BLM and Barrick have developed mitigation measures relative to potential cumulative impacts to the Rock Creek Traditional Cultural Property (TCP) and to sage grouse. These mitigation measures are outlined in the Supplemental EIS Mitigation Plan (Appendix A) and the Upper Willow Creek Habitat Enhancement Plan (Appendix B).

Key documents associated with Native American consultation are provided in Appendix D; these documents include:

- *Tribal resolutions relative to the Betze Project (Te-Moak Tribe, Elko Band Council, and South Fork Band Council);*
- *BLM letter (August 5, 2002) requesting final comments on the Betze Project Supplemental EIS;*
- *Western Shoshone Defense Project response letter (August 16, 2002) to BLM; and*
- *BLM letter (September 6, 2002) to the State Historic Preservation Office (SHPO) requesting final comments on the Betze Project Supplemental EIS mitigation and concurrence with the BLM's assessments regarding impacts to the Tosawihi and Rock Creek TCPs.*

Table 2-1
Modifications and Corrections

Page	Paragraph[1]	Line	Revised Text
1-17	5	5	pipeline; ***BLM permitted water conveyance in the existing pipeline pursuant to a right-of-way grant issued to the TS Ranch Joint Venture in September 1991.*** Approximately…
1-24	4	16	A report describing the data collected in March 2001 was submitted to the USFWS in April 2002.
1-25	7	9	***yield 500 to 5,000 gpm***, while..
1-25	7	11	***typically yield 10 to 600 gpm (McDonald Morrissey Associates, Inc. 1998).*** Within…
3-1	1	New	***Monitoring and mitigation measures for affected environmental resources are identified in Appendix A. An important part of the Mitigation Plan is the Upper Willow Creek Habitat Enhancement Plan, which would improve riparian and aquatic habitat in the Upper Willow Creek drainage and the Squaw Valley Allotment. This habitat enhancement plan is described in Appendix B.***
3-6	Figure 3.1-3		See revised Figure 3.1-3
3-16	3	4	spring ***JBR6***. Dewatering…
3-23	Figure 3.2-1		See revised Figure 3.2-1
3-28	Table 3.2-3		See revised Table 3.2-3
3-30	4	20	…(Barrick 1999*a*).
3-32	Figure 3.2-6		See revised Figure 3.2-6
3-39	2	13	Hydrographic basins, ***three hot springs (Newmont spring designation numbers 24, 40, and 43) and one warm spring (Newmont spring designation number 52) were identified. The location and description of these springs are provided in BLM 2000a***.
3-52	5	3	bicarbonate-type water. Calcium and sodium…
3-52	7	3	type water. There are…
3-53	5	11	historic mine dump (***in the Beaver Creek drainage area***) had acidic…
3-66	Table 3.2-13		See revised Table 3.2-13
3-67	Table 3.2-14		See revised Table 3.2-14
3-78	2	11	the river, ***reservoir management***, evaporative losses, ***and seepage into alluvial aquifers***. It is…
3-86	5	18	(net loss of approximately 2,700 ***acre-feet/year***) (Delete gpm)
3-111	2	8	…elevation of ***approximately 3,930*** feet amsl;
3-111	2	11	…elevation of ***approximately 4,050*** feet amsl. The two…
3-111	2	13	…reaching an ***approximate*** elevation of ***4,430*** feet amsl.
3-116	2	14	…value of ***603*** mg/L and ***283*** mg/L…
3-121	7	4	baseflow impacts to the Humboldt…
3-130	Figure 3.2-38		See revised Figure 3.2-38
3-145	Table 3.3-1 footnotes		See revised Table 3.3-1; the previous footnote 5 has been deleted.

Table 2-1 (Continued)

Page	Paragraph[1]	Line	Revised Text
3-154	3	11	...conditions. ***However, if noxious weed populations become established in these riparian areas during reduced baseflow periods, vegetation would consist of a mixture of riparian and noxious weed species after water levels returned to premine conditions.***
3-157	5	New	***BLM would monitor exposed channel sediments during reduced baseflow periods to determine if noxious weeds are present using funds from the Riparian Habitat Mitigation Fund. If noxious weeds become established in these areas, BLM could implement noxious weed control measures (e.g., herbicide application, mowing) to minimize or eradicate weed populations in riparian areas using funds from the Riparian Habitat Mitigation Fund.***
3-175	2	23	habitat associations. (Delete remainder of paragraph)
3-176	3	15	...comparison, ***four*** species...
3-176	3	17	hawk, ***great blue heron***, and...
3-176	3	22	these ***four*** species...
3-177	Table 3.4-1		See revised Table 3.4-1
3-178	7	4-7	Vegetation, and increased areas of open water during the winter. These potential effects...
3-178	7	5	the winter. These potential effects...
3-188	4	7	Restoration ***Project (MCWRP)*** and ...
3-188	5	13-15	Controlled grazing initiated in 1993 resulted in stable, well-revegtated streambanks ***by 2000; however, much of the recovered riparian zone was burned by a wildfire in 2001*** (Evans ***2001***).
3-189	1	6	Coyote, Little Jack, ***Jack, Lynn***, and Simon creeks.
3-190	1	5	...NDOW 1996***c***; ...
3-190	2	9	riparian zone. ***Habitat quality in the middle portion of upper Rock Creek has improved in terms of bank cover and stream width-to-depth ratio (BLM 1998c). However, problems including poor streambank development and lack of quality pools still exist.***
3-190	6	15	1998c). ***In August 2001, a wildfire burned the majority of the Frazer Creek watershed including the aspen/willow riparian community along the stream. Small numbers of LCT were observed to survive the fire, although the long-term impacts to the population are unknown.***
3-193	1	6	1996 results. ***Additional macroinvertebrate samples also were collected in 2000 at some sites between the Carlin gage to Golconda.***
3-200	3	13	The ***greater*** sage grouse...
3-200	4	19	Shoshone ***c***ulture (see
3-200	5	1	***The history of sage grouse accounts for Little Boulder Basin is complex. However, the BLM has been involved with a long and detailed process in an effort to protect this species from cumulative mining impacts along the Carlin Trend.*** Available data...
3-200	5	11	1995).

Table 2-1 (Continued)

Page	Paragraph[1]	Line	Revised Text
3-200	6	New	Overall surveys conducted within the Little…
3-200	7	2	a ***small number*** of concentration…
3-201	2	2	be currently active. ***Unless there is official consensus between the BLM and the Nevada Division of Wildlife that a given lek is obviously lost due to disturbances associated with mining, the agencies treat the lek as historic or inactive. It is the BLM's position to consider these historic or inactive leks as lek sites that could potentially be active in the future.*** The lek summary…
3-205	4	3	Creeks in 1997 ***and 2000*** showed…
3-205	4	11-16	(JBR 1992e). LCT that have been found in the lower reaches of ***tributary*** streams ***and in the mainstem of Maggie Creek are thought*** to be "outwash victims" that have been removed from the reproducing population ***(AATA 1997). However, there is evidence that at least some adult LCT from Maggie Creek are accessing or attempting to access tributary streams. NDOW (1999, 2000) documented very large LCT (assumed to be of Maggie Creek origin) in Coyote and Beaver creeks, while Evans (1999) observed a single large LCT attempting to ascend a perched culvert on Beaver Creek in June 1998. In addition, adult LCT have been found stranded in pools below culverts on a number of occasions in late spring or early summer (Evans 1999).*** Winter habitat…
3-205	5	New	***The effect of the 2001 wildfire on LCT populations in the Beaver Creek drainage is unknown. Although small numbers of trout were observed to have survived the fire, almost complete loss of the riparian zone along with anticipated sediment loading is expected to significantly impact this population in 2002.***
3-209	Figure 3.6-2		See revised Figure 3.6-2.
3-210	3	4, 5	…with pools that were ***located in the lower reaches of Little Jack and in Spring Creek*** (JBR…
3-210	3	9-11	…1996), ***nor during a followup survey conducted on Antelope Creek in 2001 (JBR 2001).*** Spotted frogs…
3-210	3	15	…Spring Creek (Ports 2001).
3-213	7	1	***The intent of the SEIS sage grouse analysis was to provide an overview of the overall population decline in Little Boulder Basin and surrounding areas.*** A quantitative summary…
3-215	8	4-6	***Spring*** Creek. No spotted…
3-215	8	8	…subbasin, ***Antelope Creek***, or remaining…
3-215	8	11	…been reported. (Delete remainder of paragraph)
3-217	2	10	…spotted frog. ***Residual impacts could occur to special status aquatic species if flow augmentation is required, and if the physical and chemical characteristics of the water used to augment flows are incompatible with survival of specific sensitive organisms.***
3-221	4	17	1992). No ***authorized*** livestock…

Table 2-1 (Continued)

Page	Paragraph[1]	Line	Revised Text
3-221	4	3	respectively. ***However, some unauthorized grazing has occurred in the northern portion of the Humboldt Wildlife Management Area in recent years.***
5-20	2	9	…the area. ***Proposed water augmentation projects for the Maggie Creek watershed have been described in the Maggie Creek Streamflow Augmentation Plan. Although this plan was developed in 1993 and funds are available for construction, the development of these projects has not been initiated to date. Additional water augmentation projects, possibly including groundwater reinjection, also may be proposed by Newmont for the area (BLM 1993d).***
5-20	3	5	***1,705*** acres of riparian vegetation…
5-28	6		***Hydrologic modeling predicts cumulative ground water drawdown may cause a temporary reduction of surface water flows in the following streams that are LCT habitat: the lower sections of Little Jack, Coyote, and Beaver creeks (Figure 5-5). Such reductions would occur decades in the future. As explained in Section 5.2 the cumulative drawdown would result from the combined dewatering operations of Barrick (the Goldstrike Mine), and Newmont's SOAP/SOAPA and Leeville Projects are projected by the Newmont model. Standing alone, the dewatering associated with the Goldstrike Mine is not expected to contribute to potential flow reductions in these stream sections or other surface waters occupied by LCT in the Maggie Creek basin (see Section 3.2.2.1). In addition, Barrick is not expected to contribute directly or cumulatively to flow reductions in Susie Creek, which has been identified as a potential LCT re-introduction stream (Coffin and Cowan 1995).***
5-37	3	8	drawdown. (Delete remainder of paragraph.)
5-37	5	1-3	Based on these data, it appears that without mitigation some level of impact could occur to the Rock Creek Traditional Cultural Property.
8-2	9	New	***Barrick Goldstrike Mines Inc. 2002. Correspondence to H. Hankins, District Manager, Elko District Office, Bureau of Land Management from Rich Haddock, dated April 10, 2002, regarding withdrawal of application to amend right-of-way (N-52388).***
8-2	10	New	***Barrick Goldstrike Mines Inc. 2001a. Personal communication from J. Zhan, Barrick Goldstrike Mines Inc. to P. Plumley, Short Elliott Hendrickson Inc., regarding model simulation. March 2001.***
8-3	10	New	***Berger, D. L. 2000. Water Budget Estimates for the 14 Hydrographic Areas in the Middle Humboldt River Basin, North-Central Nevada. U.S. geological Survey Water Resources Investigations Report 00-4168.***
8-4	4	New	***Bureau of Land Management. 2002. Final Environmental Impact Statement, Newmont Mining Corporation's South Operations Area Project Amendment. Elko Field Office. Elko, Nevada.***

Table 2-1 (Continued)

Page	Paragraph[1]	Line	Revised Text
8-9	11	New	*Gephardt, J. 2001. Nevada Division of Wildlife. Personal communication with J. Alstad, ENSR, February 12, 2001.*
8-10	3	New	*Gray, K. 2001. Nevada Division of Wildlife. Personal communication with L. Nielsen, ENSR, Fort Collins, Colorado. January 26, 2001.*
		New	*Horton, G. 1998. Facsimile from G. Horton (Nevada Division of Water Planning) to T. Grady (Maxim technologies, Inc.) of Preliminary 1995 Water Use Data for Nevada.*
8-12	3	New	*JBR Environmental Consultants, Inc. 2001. Spotted Frog Survey Report, Antelope Creek, Elko County, Nevada. Prepared for Barrick Goldstrike Mines Inc., Elko, Nevada.*
8-16	15	New	*Nevada Division of Wildlife. 1998d. Big Game Status and Quota Recommendations. Prepared by Mike Hess.*
8-17	9	New	*Nevada State Engineer's Office. 2001. Personal communication with B. Kightlinger and K. Owsley, Nevada Department of Conservation and Natural Resources, Division of Water Resources, Elko, Nevada, with J. Burrell, Riverside Technology, inc. March 30, 2001*
8-19	6	New	*Ports, M. A. 2001. Memo to C. Evans Showing Locations of Spotted Frog Observed March 23, 1994, in the Maggie Creek Basin. Bureau of Land Management, Elko Field Office Files. Elko, Nevada. Memo Dated October 23, 2001.*

[1] Paragraph number includes first partial paragraph at top of page, if applicable.

REVISED TABLES

Table 3.2-3
Summary of Hydrostratigraphic Unit Hydraulic Properties

Hydrostratigraphic Unit	Yields (gpm)	Estimated Hydraulic Conductivity (feet/day)	Estimated Transmissivity (feet²/day)	Estimated Storage Coefficient (no units)
Younger Basin Fill	Up to 3,600 in Boulder Valley[2]	1 to 100[2]	4,500[1] - 13,400[2]	0.0025[1]
Older Basin Fill	<100 - 1,000[1]	0.05 - 5[2]	20 - 900[2]	0.0038[2]
Intrusive Rocks	Generally <10[2]	0.01 - 1	NA	NA
Volcanic Rocks	Up to 5,800 in Boulder Valley[2]	0.5 - 250[2]	300 - 100,000[2]	0.0007 - 0.003[2]
Marine Clastic Rocks	***10 - 600***[2,3]	0.0014 - 100[1]	30 - 800[2]	0.0001 - 0.004[2]
Marine Carbonate Rocks	***500 - 5,000***[2]	***0.01 - 40***[2]	13 - 300,000[2]	0.0002 - 0.014[1]

[1] Maurer et al. 1996.

[2] McDonald Morrissey Associates, Inc. 1996a,b, 1998.

[3] ***Where highly fractured, may yield more than 600 gpm.***

NA - No data available.

Table 3.2-13

Mean Annual Humboldt River Gains *(+)* and Losses *(-)* (cfs)

River Reach	January 1946 - May 1990 Flows	June 1990 - December 1996 Flows
Carlin to Palisade	+51	+76
Palisade to Argenta	-43	-83
Argenta to Battle Mountain	+4	+17
Battle Mountain to Comus	-30	-47
Comus to Imlay	-60	-58

Source: RTi 1998.

Table 3.2-14
Mean October Gains (+) and Losses (-) in the Humboldt River (cfs)

River Reach	January 1946 - May 1990	June 1990 - December 1996
	Mean October Flows	Mean October Flows
Carlin to Palisade	+18.4	+20.6
Palisade to Argenta	-29.7	-30.1
Argenta to Battle Mountain	+5.1	-1.2
Battle Mountain to Comus	-9.7	+12.3
Comus to Imlay	+14.4	-4.5

Source: RTi 1998.

Table 3.3-1
Acres of Riparian and Wetland Vegetation in the Study Area

Watershed (*Stream*)	Area[1]	Streambar	Herbaceous Streambar	Wet Meadow	Salix Streambar	Salix/Wet Meadow	Salix/Mesic Meadow	Salexi/ Wet Meadow	ALNINC/Mesic Meadow	Total
Maggie Creek										
Beaver Creek	M1	2	1	1	0	0	0	1	47	52
Beaver Creek	M2	121	6	3	22	0	42	0	77	271
Coyote Creek	**M3**	**0**	**2**	**0**	**22**	**0**	**0**	**1**	**64**	**89**
Coyote/Spring Creeks[2]	M4	87	10	99	1	1	3	24	0	225
Little Jack Creek	**M5**	**41**	**23**	**1**	**9**	**0**	**0**	**0**	**51**	**125**
Little Jack and Jack[3] *Creeks*	M6	31	32	128	13	0	1	37	0	242
Maggie Creek	--	125	176	464	0	0	0	163	0	928
James Creek	--	1	6	0	0	0	0	2	0	9
Soap Creek	--	0	3	<1	0	0	0	0	0	3
Marys Creek	--	2	12	<1	0	0	0	3	0	17
Mack Creek	--	0	7	0	0	0	0	1	0	8
Lynn/Simon Creeks	**--**	**0**	**2**	**29**	**0**	**0**	**0**	**0**	**0**	**31**
Cottonwood Creek	**--**	**3**	**4**	**0**	**0**	**0**	**0**	**0**	**0**	7
E. Cottonwood Creek	--	0	<1	6	0	0	0	0	0	6
Fish Creek	--	5	3	0	0	0	0	<1	0	8
Indian Creek	--	<1	1	0	0	0	0	0	0	1
Bob's Creek	--	0	2	0	0	0	0	0	0	2
Subtotal	--	*418*	*290*	*732*	*67*	*1*	*46*	*232*	*239*	*2,025*[4]
Rock Creek										
Rock Creek	R1	8	90	0	0	0	0	0	0	98
Rock Creek	R2	23	78	0	0	0	0	0	0	101
Rock Creek	R3	29	171	0	0	0	0	0	0	200
Rock Creek	R4	0	74	0	0	0	0	0	0	74
Willow Creek	R5	0	107	80	12	0	0	139	0	338
Willow Creek	R6	0	102	1	2	0	0	0	0	105
Willow Creek	R7	20	69	7	1	0	0	3	0	99
Willow Creek	R8	0	4	2	0	0	0	0	0	6
Willow Creek	R9	0	70	7	0	0	2	1	0	80
Willow Creek	R10	0	4	0	0	0	0	0	0	4
Willow Creek	R11	0	0	1	0	0	1	1	<1	3
Antelope Creek	R12	0	48	0	0	0	0	0	0	48
Antelope Creek	R13	0	67	0	0	0	0	0	0	67
Antelope Creek	**R14**	**0**	**75**	**0**	**0**	**0**	**0**	**0**	**0**	**75**

Table 3.3-1 (Continued)

Watershed (*Stream*)	Area[1]	Streambar	Herbaceous Streambar	Wet Meadow	Salix Streambar	Salix/Wet Meadow	Salix/Mesic Meadow	Salexi/ Wet Meadow	ALNINC/Mesic Meadow	Total
Antelope Creek	**R15**	**0**	**98**	**5**	**0**	**0**	**0**	**0**	**0**	**103**
Antelope Creek	R16	0	47	11	1	1	5	0	0	65
Antelope Creek	R17	0	7	0	1	0	20	0	0	28
Boulder Creek	**R18**	**0**	**118**	**1**	**0**	**0**	**0**	**0**	**0**	**119**
Boulder Creek	**R19**	**0**	**35**	**0**	**1**	**0**	**1**	**0**	**9**	**46**
Green, Knob, and Sand Dune Springs[5]	R20	0	0	0	0	0	0	0	0	0
Green, Knob, and Sand Dune Springs[5]	**R21**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Welches Creek	**R22**	**0**	**24**	**1**	**0**	**0**	**1**	**0**	**0**	**26**
Subtotal	--	*80*	*1,288*	*116*	*18*	*1*	*30*	*144*	*9*	*1,685*[4]
Susie Creek										
Cold Creek[6]	--	3	2	0	0	0	0	0	0	5
Blue Basin Creek[6]	--	2	1	0	0	0	0	0	0	3
Adobe Creek[7]	--	1	<1	0	0	0	0	0	0	1
Swales Creek[6]	--	3	2	0	0	0	0	0	0	5
Camp Creek[7]	--	2	1	0	0	0	0	0	0	3
Susie Creek[2]	--	127	77	0	0	0	0	0	0	204
Middle Susie Creek[6]	--	0	<1	1	0	0	0	0	0	1
Hot Springs Drainage	--	2	3	0	0	0	0	0	0	5
Subtotal	--	*140*	*87*	*1*	*0*	*0*	*0*	*0*	*0*	*228*[4]
Humboldt River Tributaries										
Primeaux Creek	--	<1	<1	0	0	0	0	0	0	1
Palisade Creek	--	0	<1	0	0	0	0	0	0	<1
Buck Rake Jack Creek	--	0	5	0	0	0	0	0	0	5
Dry Susie Creek	--	0	<1	0	4	0	0	0	0	4
Subtotal	--	*0*	*6*	*0*	*4*	*0*	*0*	*0*	*0*	*10*[4]
Humboldt River	--	0	141	5	242	0	<1	0	0	388
Subtotal	--	*0*	*141*	*5*	*242*	*0*	*0*	*0*	*0*	*388*[4]
Total	--	*638*	*1,812*	*854*	*331*	*2*	*76*	*376*	*248*	*4,337*[4]

Table 3.3-1 (Continued)

FOOTNOTES:

[1] Inventory areas used by Whitehorse Associates 1995a,b.

[2] Riparian acreage for the lower portion of Susie Creek was based on acreages reported in BLM 1993b. Riparian acreage for the upper portion of Susie Creek was based on the assumption stated in footnote 7. Riparian acreage estimates may be low since riparian habitat along upper Susie Creek has not been inventoried, and the area does support several, large wet meadow complexes.

[3] Acreage was based on Whitehorse Associates 1995b; BLM 1993b.

[4] Numbers are approximate due to rounding.

[5] An additional 2,819 acres of Marsh/Transition to Marsh riparian vegetation was identified in R20 and R21 that was associated with the newly formed springs in Boulder Valley. The dominant species present was *Typha latifolia* (cattail).

[6] An average width of 5 feet was assumed for riparian vegetation along these creeks since riparian inventories have not been conducted.

[7] Riparian vegetation associated with this creek has an average width of 35 feet.

Note: **BOLD** type indicates the riparian inventory areas that are within the 10-foot ground water drawdown area predicted for the Goldstrike Mine.

Sources: Whitehorse Associates 1995a,b; BLM 1993b; JBR 1993.

Table 3.4-1
Highest (from 10 to 233 years) Median Pit Lake Water Concentrations and Benchmark NOAELs[1] for Water Ingestion

			Water Ingestion NOAELs (mg/L)			
Chemical	**Highest Concentration (mg/L)**	**Year/Location**	**Rough-winged Swallow**	**Red-tailed Hawk**	***Great Blue Heron***	**Little Brown Bat**
Aluminum	<0.021	All[2]	471.4	1,930.0	***2,478.1***	8.188
Antimony	0.066	Yr 26; east lake				1.105
Boron	0.009	Yr 233; combined pit lake	124	507	***651***	457
Cadmium	<0.0024	All	6.23	25.51	***32.76***	15.757
Copper	<0.003	All	202.0	826.9	***1,061.7***	248.5
Fluoride	1.72	Yr 233; combined pit lake	33.5	137.2	***176.2***	666.2
Manganese	<0.002	All	4,284	17,541	***22,522***	1,438
Nickel	<0.017	All	332.61	1,361.76	***1,748.45***	653.42
Selenium	0.006	Yr 10; west pit lake	2.149	8.797	***11.295***	3.267
Strontium	0.185	Yr 26; west pit lake				4,296
Thallium	0.001	All				0.122
Zinc	<0.002	All	62.3	255.1	***327.6***	2,613.7

[1] Benchmark NOAELs are from Sample et al. 1996.

[2] "All" indicates the predicted concentration is the same in all pit lake configurations and years after mine closure.

REVISED FIGURES

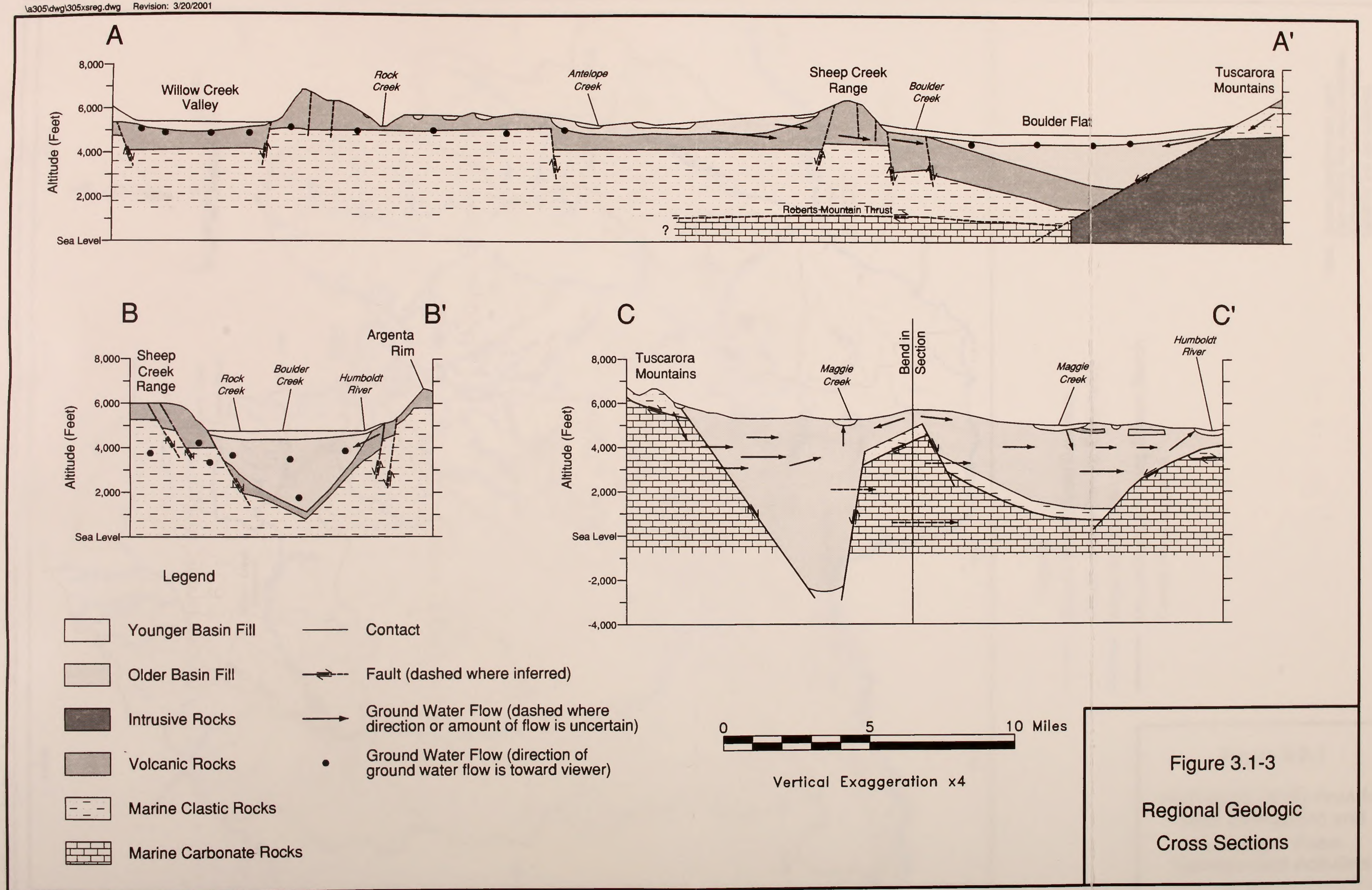
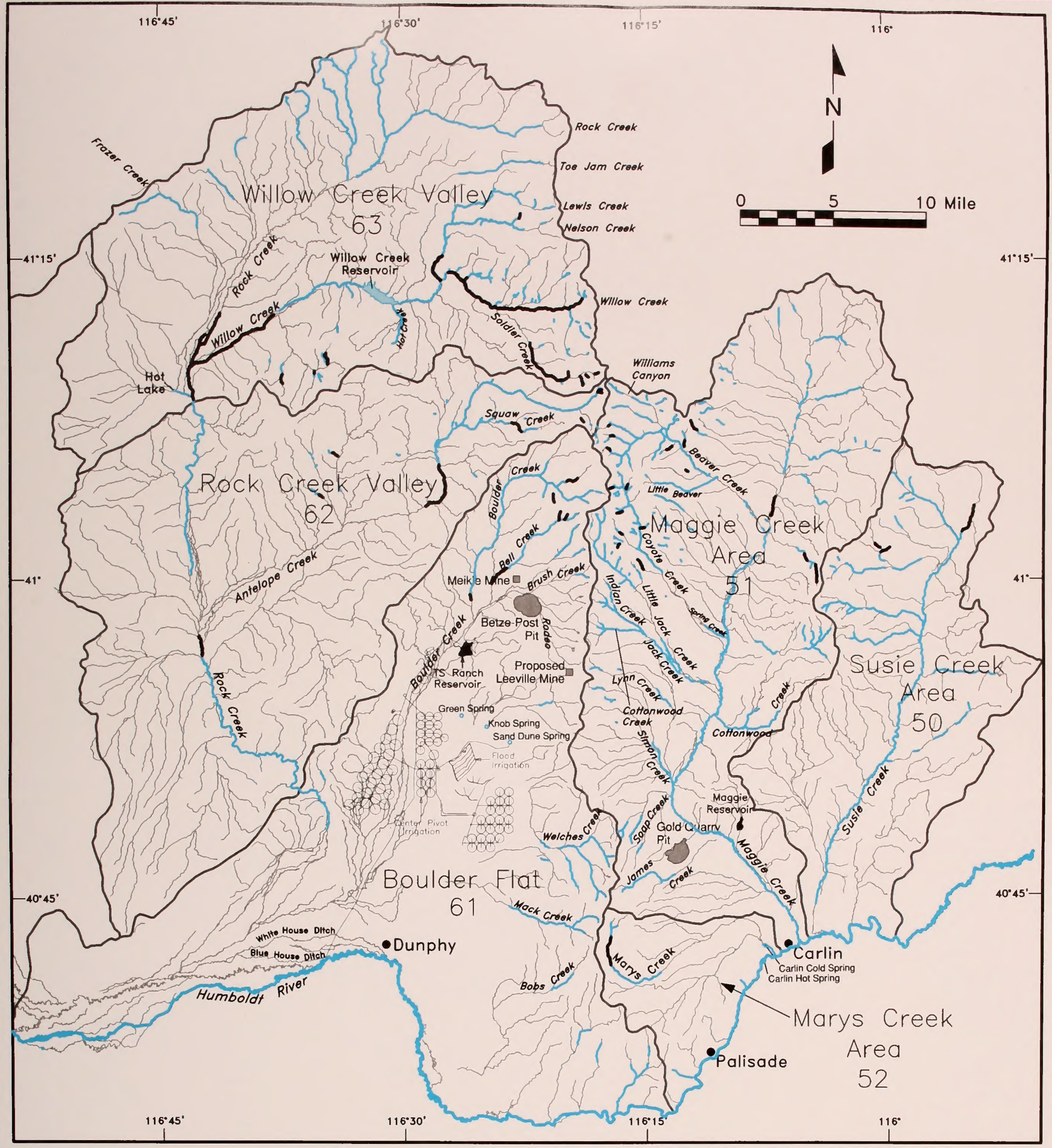


Figure 3.1-3

Regional Geologic Cross Sections

\A305\DWG\305PER.DWG (layer on: textsels) REVISION: 3/19/2001 [305pers.plt]



Legend

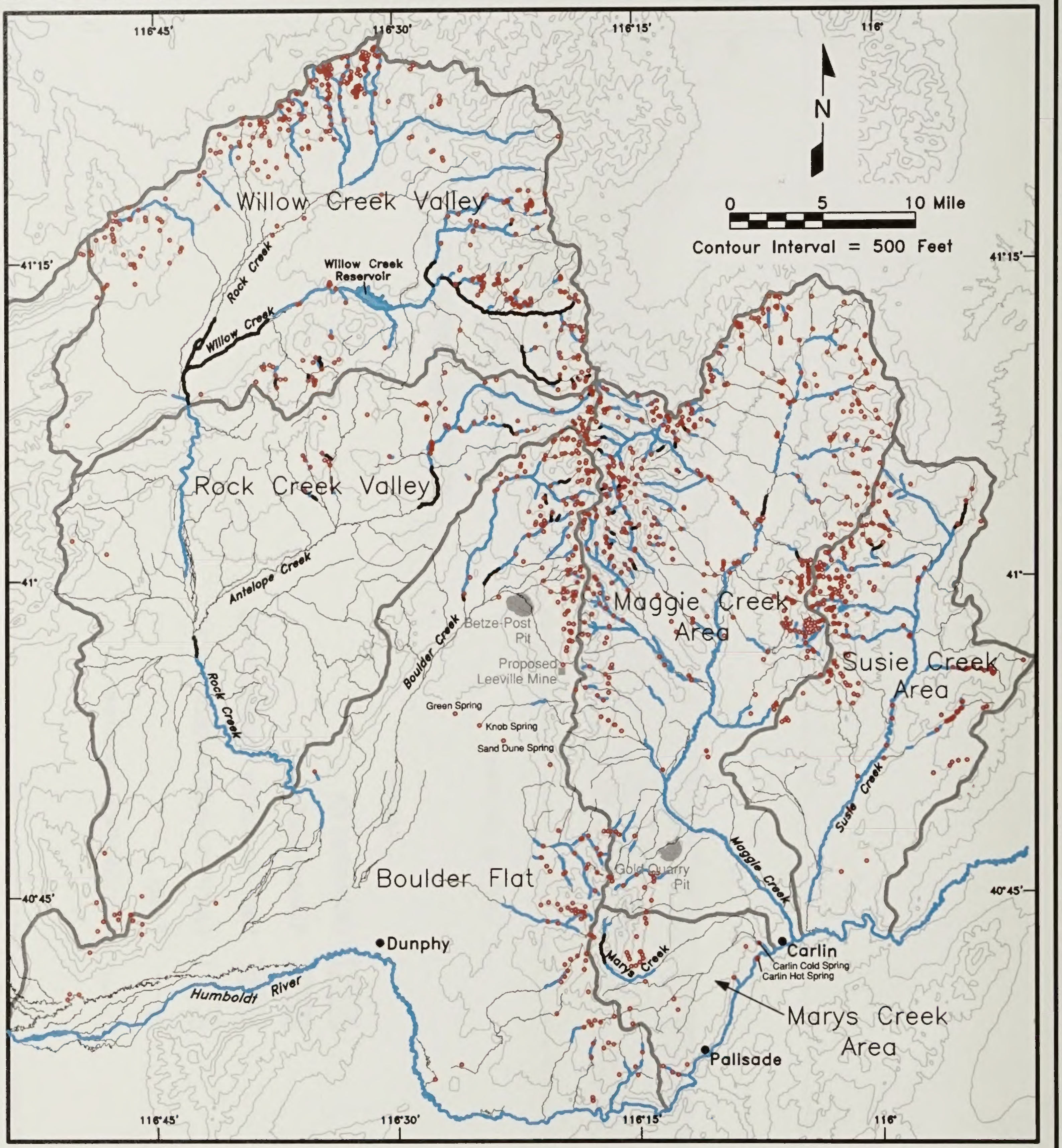
—	Ground Water Basin Boundary
—	Stream (Intermittent or Ephemeral)
—	Perennial Stream
—	Discontinuous Flowing Stream Reach
○	Center Pivot Irrigation

Note: Stream locations are taken from USGS line graph database. Hydrographic Area Boundary locations are approximate.

Figure 3.2-1

Hydrologic Study Area for Mine Dewatering and Localized Water Management Activities

\A305C\DWG\305cspg.dwg [layer on: textsele] REVISION: 3/20/2001 [305cspge.pH]



Legend

Ground Water Basin Boundary

Stream (Intermittent or Ephemeral)

Perennial Steam

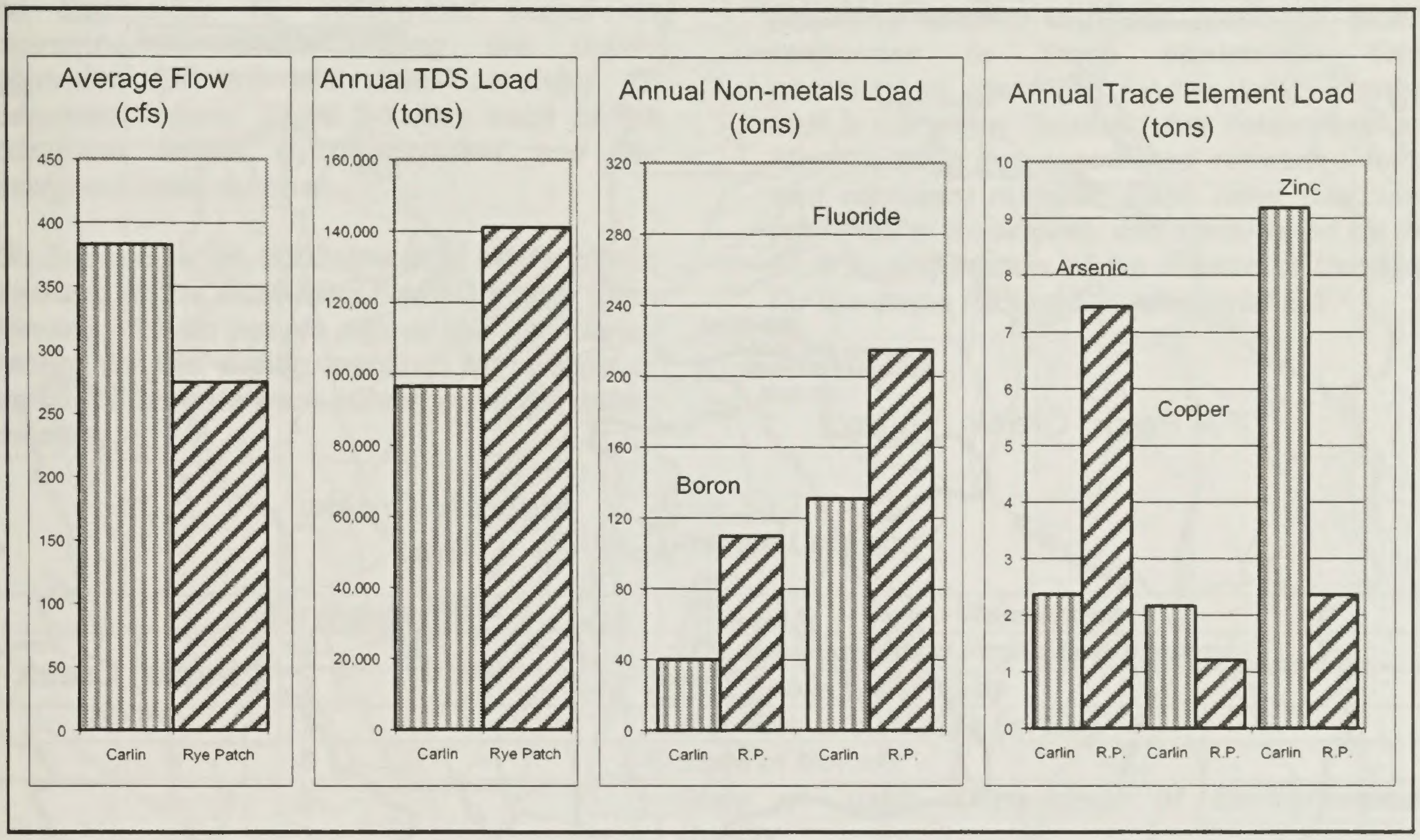
Discontinuous Flowing Stream Reach

• Spring and Seeps

Note: Stream locations are taken from USGS line graph database. Hydrographic Area Boundary locations are approximate.

Figure 3.2-9

Areas of Perennial Stream Reaches, Springs, and Seeps in the Hydrologic Study Area

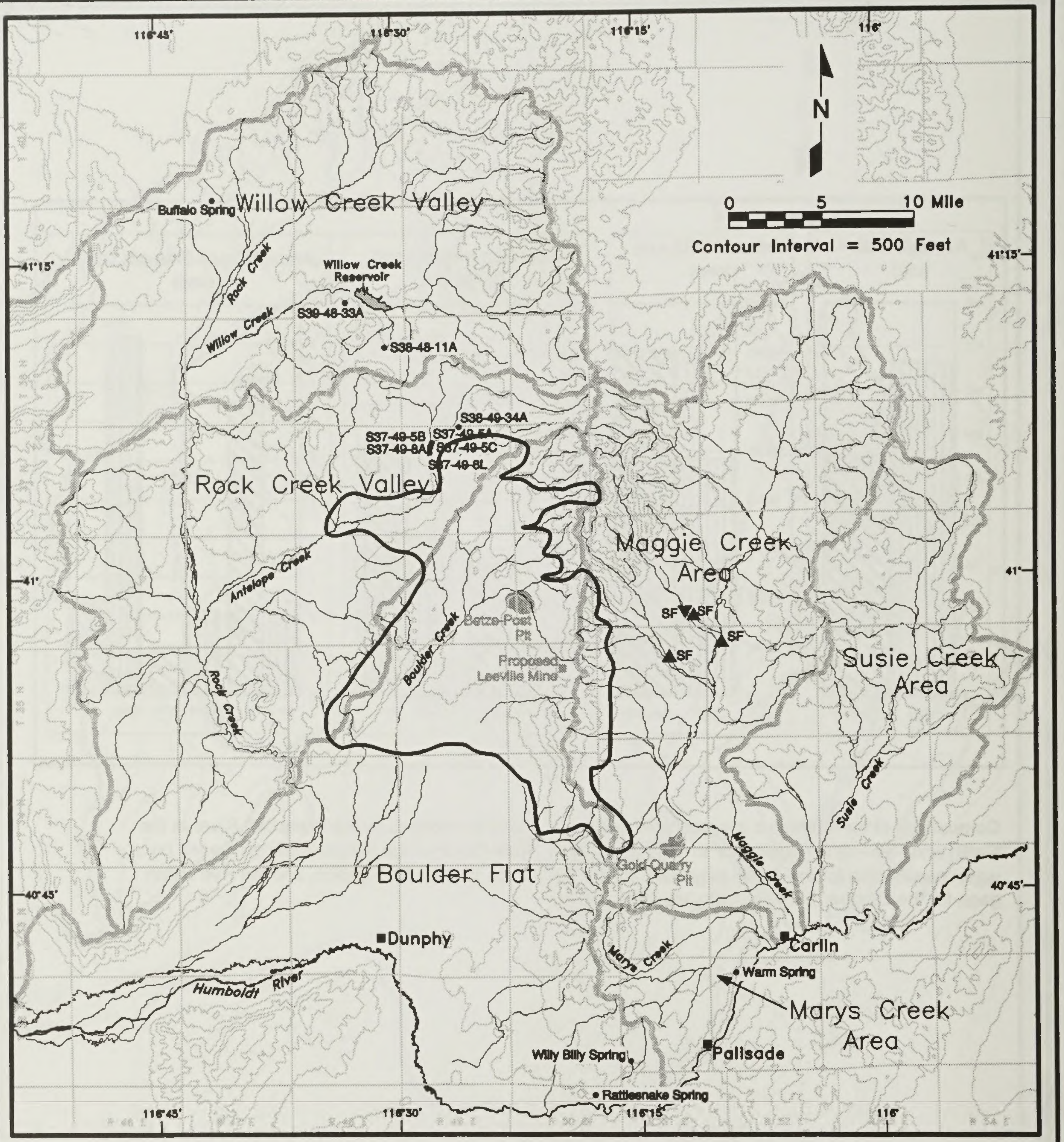


Comparison of the estimated average annual dissolved load transported by the Humboldt River at the Carlin and Rye Patch gages prior to mine discharges. Note that average annual loads are based on water quality data for the Carlin gage for the April 1979 through April 1991 period, and the Rye Patch gage for the October 1974 through July 1986 period.

Figure 3.2-38

Estimated Average Annual Premine Loads at the Carlin and Rye Patch Gages

\A305\DWG\305snail.dwg (layer on: textsels, ddbarrick*) REVISION: 5/28/2002 [305snail.plt]



Legend

Ground Water Basin Boundary

Stream

Maximum Extent of 10-foot Drawdown Contour[1]

S37-49-8A ● Springsnail Location

SF▲ Spotted Frog Collection Sites

SF▼ Spotted Frog Potential Habitat

[1] See text in Section 3.2.2.1 for explanation

Figure 3.6-2

Known Locations for Springsnail Populations and Spotted Frog Habitat

3.0 DRAFT SEIS REVIEW

The 60-day public comment period on the Betze Project Draft Supplemental EIS began on September 15, 2000, and ended on November 14, 2000. During the public comment period, the BLM received 19 comment letters. Table 3-1 lists each of the comment letters by respondent and the assigned letter number.

On September 26, 2000, the BLM held a public meeting at the BLM Elko Field Office in Elko, Nevada. Eleven people signed the attendance record for the public meeting. No written or verbal comments were submitted at the public meeting.

Comments that were received during the public comment period are presented on the following pages, together with the BLM's responses to these comments. Each comment is identified by the letter number and a comment number; the responses are identified by the associated reference letter and comment number. Each letter has been reviewed in its entirety and considered by the BLM in preparation of the Record of Decision for the Betze Project Supplemental EIS.

Table 3-1
Public Comment Letters

Letter Number	*Respondent*
1	*U.S. Environmental Protection Agency*
2	*U.S. Geological Survey*
3	*U.S. Fish and Wildlife Service*
4	*State of Nevada*
5	*State of Idaho, Department of Environmental Quality*
6	*Pyramid Lake Paiute Tribal Council*
7	*Te-Moak Tribe of Western Shoshone*
8	*Western Shoshone Defense Project*
9	*Great Basin Mine Watch*
10	*Newmont Mining Corporation*
11	*Russell Parker*
12	*Art Castellanos*
13	*Claudette McCain*
14	*Gregory L. Taylor*
15	*Leslie H. Brooks*
16	*Max Lenaburg*
17	*Erik Taylor*
18	*Battle Mountain Band Council*
19	*U.S. Fish and Wildlife Service*

Letter 1

UNITED STATES ENVIRONMENTAL PROTECTION
REGION IX
75 Hawthorne Street
San Francisco, CA 94105-3901

AW ENF
NON-REN ✓
RENEWABLE
S. S.
FIRE
CF CODE:
ACTION

Helen Hankins
Bureau of Land Management
Elko Field Office
3900 E. Idaho Street
Elko, NV 89801

Dear Ms. Hankins:

The U.S. Environmental Protection Agency (EPA) has reviewed the Draft Supplemental Environmental Impact Statement (DSEIS) for the Betze Project, Elko and Eureka counties, Nevada. Our comments are provided pursuant to the National Environmental Policy Act (NEPA), the Council Environmental Quality's NEPA Implementation Regulations at 40 CFR 1500-1508, and Clean Air Act Section 309.

Following issuance of BLM's 1991 Record of Decision on construction of the Betze Project by Barrick Goldstrike Mines, Inc., groundwater pumping, water management activities, and monitoring provided significant new information regarding groundwater pumping requirements and potential impacts of operations. Barrick has built a water treatment plant and buried pipeline and open conveyance system to discharge up to 70,000 gallons per minute to the Humboldt River. Barrick has also submitted an application to the BLM to amend an existing right-of-way (ROW) to allow installation of a second pipeline across federal lands in order to improve the efficiency of Barrick's water distribution system. This DSEIS analyzes the potential impacts of Barrick's existing and future water management operations and of the proposed buried pipeline, which is the Proposed Action. A No Action alternative is also analyzed.

We have rated this DSEIS as EC-2 – Environmental Concerns-Insufficient Information (see enclosed "Summary of Rating Definitions and Follow-Up Actions"). Although only a small pipeline project is proposed in this DSEIS, the document analyzes the impacts of water management operations at the mine. We have concerns regarding the direct and cumulative impacts to biological resources and recommend additional information in the Final Supplemental Environmental Impact Statement (FSEIS) regarding the ecological risk assessment, cumulative impacts and mitigation. We also recommend that the proposed project be better described and an alternative be considered that could mitigate impacts to some springs and streams. Our specific comments are enclosed.

Letter 1 Continued

We appreciate the opportunity to review this DSEIS. Please send a copy of the FSEIS to this office when it is officially filed with our Washington, D.C., office. If you have any questions, please call me at (415) 744-1584 or Jeanne Geselbracht at (415) 744-1576.

Sincerely,

David J. Farrel, Chief
Federal Activities Office

003493

Enclosures

cc: Dave Gaskin, NDEP
Stan Wiemeyer, U.S. Fish and Wildlife Service

SUMMARY OF EPA RATING DEFINITIONS

This rating system was developed as a means to summarize EPA's level of concern with a proposed action. The ratings are a combination of alphabetical categories for evaluation of the environmental impacts of the proposal and numerical categories for evaluation of the adequacy of the EIS.

ENVIRONMENTAL IMPACT OF THE ACTION

"LO" (Lack of Objections)

The EPA review has not identified any potential environmental impacts requiring substantive changes to the proposal. The review may have disclosed opportunities for application of mitigation measures that could be accomplished with no more than minor changes to the proposal.

"EC" (Environmental Concerns)

The EPA review has identified environmental impacts that should be avoided in order to fully protect the environment. Corrective measures may require changes to the preferred alternative or application of mitigation measures that can reduce the environmental impact. EPA would like to work with the lead agency to reduce these impacts.

"EO" (Environmental Objections)

The EPA review has identified significant environmental impacts that must be avoided in order to provide adequate protection for the environment. Corrective measures may require substantial changes to the preferred alternative or consideration of some other project alternative (including the no action alternative or a new alternative). EPA intends to work with the lead agency to reduce these impacts.

"EU" (Environmentally Unsatisfactory)

The EPA review has identified adverse environmental impacts that are of sufficient magnitude that they are unsatisfactory from the standpoint of public health or welfare or environmental quality. EPA intends to work with the lead agency to reduce these impacts. If the potentially unsatisfactory impacts are not corrected at the final EIS stage, this proposal will be recommended for referral to the CEQ.

ADEQUACY OF THE IMPACT STATEMENT

Category 1" (Adequate)

EPA believes the draft EIS adequately sets forth the environmental impact(s) of the preferred alternative and those of the alternatives reasonably available to the project or action. No further analysis or data collection is necessary, but the reviewer may suggest the addition of clarifying language or information.

"Category 2" (Insufficient Information)

The draft EIS does not contain sufficient information for EPA to fully assess environmental impacts that should be avoided in order to fully protect the environment, or the EPA reviewer has identified new reasonably available alternatives that are within the spectrum of alternatives analysed in the draft EIS, which could reduce the environmental impacts of the action. The identified additional information, data, analyses, or discussion should be included in the final EIS.

"Category 3" (Inadequate)

EPA does not believe that the draft EIS adequately assesses potentially significant environmental impacts of the action, or the EPA reviewer has identified new, reasonably available alternatives that are outside of the spectrum of alternatives analysed in the draft EIS, which should be analysed in order to reduce the potentially significant environmental impacts. EPA believes that the identified additional information, data, analyses, or discussions are of such a magnitude that they should have full public review at a draft stage. EPA does not believe that the draft EIS is adequate for the purposes of the NEPA and/or Section 309 review, and thus should be formally revised and made available for public comment in a supplemental or revised draft EIS. On the basis of the potential significant impacts involved, this proposal could be a candidate for referral to the CEQ.

*From EPA Manual 1640, "Policy and Procedures for the Review of Federal Actions Impacting the Environment."

Letter 1 Continued

Betze Project Draft Supplemental EIS
EPA Comments – November, 2000

Proposed Project

1-1 The proposed project is not completely described in Chapter 2; therefore, it is unclear whether other alternatives exist or are worth exploring. The FSEIS should describe in detail the pipeline from one end to the other, including the components located on private land. Figure 2-1 should be redrawn to indicate the full extent of the new pipeline, including that which is not on public land.

1-2 For example, several water management alternatives are discussed on pages 1-25 and 1-26 of the DSEIS. One alternative involves infiltration or injection of water, but was eliminated because Barrick argued that it would be impractical to infiltrate water upgradient of the area being dewatered. However, instead of piping the water for irrigation purposes in Boulder Flat, Barrick could pipe this water to areas where impacts to perennial streams and springs could be mitigated. An overlay of Figures 3.2-7 and 5-5 indicate that areas in upper Boulder Creek basin and/or southeast of the Betze Pit could accommodate surface water or groundwater replenishment without a direct impact on the dewatering operations. The FSEIS should analyze this possibility for discharging excess water.

Ecological Risk

The ecological risk assessment discussion concludes that potential harm to the Humboldt Sink and the lakes along the Humboldt River from the proposed project is likely to be small but cannot be accurately predicted from ecotoxicology. We agree. The report's inability to predict risk stems largely from the environmental and meteorological variability involved in evaluating
1-3 such a large area. In order to arrive at a more robust conclusion, the assessment should consider predicted changes in the toxicity of river water at the existing and proposed discharge points on the Humboldt River. That is, an ecotoxicology analysis at the local scale should be conducted. This analysis must be based on media concentrations (water and possibly sediment chemistry) or doses to receptors compared to toxicity benchmarks. This would give a much more robust assessment of the potential impact of the proposed actions on the aquatic habitat, with much less influence of the confounding factors involved in looking at predicted impact in distal locations such as Humboldt Lake. We have the following additional comments:

1-4 Using comparisons to median predicted concentration (DSEIS, Table 3.4-1), the risk assessment indicates a very low probability of future impact from the pit lake. However, it is questionable whether the median values of predicted pit lake aquatic chemistry are the best metric. In general, the median of a data set is the least useful measure of central tendency. Comparisons to the mean and either the maximum value or the 95% upper confidence limit of the mean, with a subsidiary discussion of any modality in the distribution, would be preferable.

Responses to Letter 1

1-1 Barrick and Elko Land and Livestock Company (ELLCO) have withdrawn the application for a right-of-way grant amendment to construct a second water pipeline across BLM lands in Boulder Valley; therefore, the buried pipeline is no longer the Proposed Action.

1-2 Potential impacts and mitigation for potential impacts to perennial streams and springs in the upper Boulder Creek watershed area were previously addressed in the Betze Project EIS (Bureau of Land Management [BLM] 1991b) and Meikle Mine Environmental Assessment (EA) (BLM 1993a). One of the principal purposes of the Supplemental EIS (SEIS) was to reevaluate and update the predictions of potential impacts to water resources anticipated from Barrick's mine dewatering and water management operations. As shown by the comparison in Figure D-6 and as discussed in Section D1.2 in the Draft SEIS, the updated ground water flow model predicts that the areal extent of ground water drawdown will be smaller than earlier predictions identified in the Betze Project EIS and Meikle Mine EA. The estimated impacts to water-dependent resources would correspondingly be reduced. For example, the estimated acreage of riparian habitat that potentially could be impacted from pumping at the mine has been reduced from 330 acres (as estimated in the original Betze Project EIS) to 137 acres (as estimated in the SEIS). In summary, the SEIS does not predict greater impacts to water resources resulting in the need for ground water replenishment.

Relative to the areas suggested for ground water replenishment, reinjected water in these areas (upper Boulder Creek and/or southeast of the Betze Pit) would eventually flow back to the dewatering system, requiring additional pumping at both the Goldstrike Mine and Newmont Gold Company's mines located southeast of the Betze Pit. Therefore, these areas are not practicable sites for ground water replenishment. In addition, there are no perennial streams in the area of potential effect to the southeast of the mine. For these reasons, the BLM has decided not to further evaluate reinjection alternatives in the Final SEIS.

1-3 Impacts of Barrick's dewatering discharges to the Humboldt River are addressed in the Draft SEIS. Barrick has a National Pollutant Discharge Elimination System (NPDES) permit from the Nevada Division of Environmental Protection (NDEP) authorizing dewatering discharges to the Humboldt River. The effluent limitations are designed such that water quality constituents would not exceed stream water quality standards established for protection of identified beneficial uses. No violations of numerical effluent limitations were documented during the historic discharge period for the mine (September 1997 to February 1999). In addition, Barrick does not anticipate future discharges; however, if discharges do occur, they would meet the effluent limitations set forth in the NPDES permit. Barrick has agreed to provide $25,000 to the Humboldt River study for years that Barrick discharges.

Responses to Letter 1

1-4 The predicted water chemistry of the future pit lake(s) was calculated using the MINTEQA2 model, the results of which are presented in a Radian International (1997a) report. The MINTEQA2 model is used to "simulate the interactions of the numerous geochemical reactions . . . that take place as the pit lake evolves and eventually reaches a steady-state condition." The output of the model is a probability (including the 50th percentile) continuum of predicted water quality. Therefore, there is no mean or confidence limits. Since the median represents the best estimate of water quality, the BLM believes it is appropriate for use in the risk assessment. The assessment is already highly conservative, since it assumes 100 percent exposure to the pit lake water and makes the comparison using a "no effects level" (NOAEL). A comparison to the 95th percentile would make the assessment much more conservative, but it also would greatly increase the model uncertainty and thus, it would not provide additional insight into potential realistic risks to wildlife.

Letter 1 Continued

Betze Project Draft Supplemental EIS
EPA Comments – November, 2000

1-5 Table 3.4-3 in the DSEIS indicates that Humboldt Lake water under premining conditions is not a threat. However, the conclusions made in the text regarding water quality are not supported in Table 3.4-4, which indicates that selenium and boron are sufficiently elevated in tissues form organisms in Humboldt Lake to cause concern under premining conditions.

1-6 Furthermore, Table 3.4-5 in the DSEIS should have included the calculated hazard quotients. Otherwise, it can not be determined whether the cumulative risk from doses to wildlife is a concern. The statement in the text on page 3-184 that no hazard quotient is above 1 is not sufficient.

Mitigation

1-7 Specific mitigation measures are not identified or described for post-mining impacts such as: soil salinity accumulations on formerly saturated lands below TS Ranch Reservoir, as well as the resultant saline and/or alkaline runoff conditions; or accelerated eolian or surface water erosion on 10,000 acres of agricultural land that will be taken out of production after dewatering ceases. These measures should be identified and described in the FSEIS, and the bonds for these activities should be itemized.

Cumulative Impacts

In our October 26, 2000, letter to you, EPA commented on the BLM's "*Cumulative Impacts Analysis of Dewatering and Water Management Operations for the Betze Project, South Operations Area Project Amendment, and Leeville Project*" (April, 2000). We expressed our concern that safe yield will be exceeded by dewatering activities in the cumulative impact area. About 30 percent of the groundwater pumped will be removed from the hydrologic system, and it is stated that the regional water balance will be out of equilibrium. It is unclear that the resulting ecological disruption will be appropriately mitigated. We commented that the analysis lacks some important information, discussed below, which should be addressed in a follow-up or supplemental analysis, as well as in each of the individual EISs for the cumulative impact area, including the Betze Project FSEIS.

1-8 The cumulative impact of mine dewatering activities to surface water quality in the Humboldt River and Humboldt Sink was limited to arsenic, copper, zinc, fluoride, boron, and total dissolved solids (TDS). In terms of cumulative impacts, the three metals of most concern, cadmium, mercury and selenium, were not included in the analysis. Figure 3-29 in the analysis estimates the potential increase in pollutant loading at the Rye Patch Gage. The text states that this estimate is based on very limited pre-mine data. Due to the lack of data points and information on bioaccumulative metals, this analysis is not sufficient to determine the potential impacts of the dewatering operations on aquatic organisms and terrestrial wildlife.

Responses to Letter 1

1-5 Tables 3.4-3 and 3.4-4 in the Draft SEIS represent two different sources of potential contaminants and two different routes of exposure: water ingestion and food ingestion, respectively. This separation is consistent with laboratory toxicity studies that usually deal with only one exposure route at a time. Chemicals ingested via water or food are often assimilated differently and thus may promote very different effects. For that reason, it makes sense toxicologically to separate water and food into different exposure routes, especially during a screening-level risk assessment. The assessments represented by these two tables are not inconsistent with each other or with the text and simply represent a comparison of measured concentrations to the best available toxicity data for that particular exposure route. As stated on page 3-180 of the Draft SEIS, because some of the measured concentrations of some metals in tissues collected from Humboldt Lake were higher than benchmarks, a more detailed assessment using multiple exposure routes was completed.

1-6 Tables 1-6a and 1-6b below provide estimated environmental doses, toxicity reference values, and hazard quotients for surrogate wildlife species in a screening-level risk assessment of constituents in the Humboldt Sink based on mean and maximum water, sediment, and tissue concentrations, respectively.

Responses to Letter 1

Table 1-6a
Estimated Environmental Doses (EED), Toxicity Reference Values (TRV), and Hazard Quotients Based on Mean Water, Sediment, and Tissue Concentrations

Constituent	Species	EED (mg/kg/d)[1]	TRV (mg/kg/d)[2]	Hazard Quotient
Arsenic	Mule Deer	0.004467	0.02	0.2233
	Great Blue Heron	0.0399163	5.14	0.0078
	Mallard Duck	0.4703017	5.14	0.0915
	Bald Eagle	0.040308	5.14	0.0078
Boron	Mule Deer	0.188732	7.05	0.0268
	Great Blue Heron	0.6383732	28.8	0.0222
	Mallard Duck	9.7837475	28.8	0.3397
	Bald Eagle	0.636024	28.8	0.0221
Chromium	Mule Deer	0.000066	4.43	<0.0001
	Great Blue Heron	0.2339545	1.0	0.2340
	Mallard Duck	0.2878932	1.0	0.2879
	Bald Eagle	0.2323824	1.0	0.2324
Copper	Mule Deer	0.000099	0.12	0.0008
	Great Blue Heron	0.0972497	27.5	0.0035
	Mallard Duck	1.0619748	27.5	0.0386
	Bald Eagle	0.8752356	27.5	0.0318
Lithium	Mule Deer	0.030938	2.37	0.0131
	Great Blue Heron	2.3974326	5.81	0.4126
	Mallard Duck	3.6188938	6.91	0.5237
	Bald Eagle	2.866248	5.2	0.5512
Mercury	Mule Deer	0.000004	0.17	<0.0001
	Great Blue Heron	0.0205145	0.45	0.0456
	Mallard Duck	0.0076313	0.45	0.0170
	Bald Eagle	0.0239552	0.45	0.0532
Molybdenum	Mule Deer	0.001411	0.12	0.0118
	Great Blue Heron	0.6130711	11.77	0.0521
	Mallard Duck	0.088784	11.77	0.0075
	Bald Eagle	0.62628	11.77	0.0532
Selenium	Mule Deer	0.000038	0.05	0.0008
	Great Blue Heron	0.097191	0.5	0.1944
	Mallard Duck	0.1675059	0.5	0.3350
	Bald Eagle	0.2006688	0.5	0.4013
Zinc	Mule Deer	0.000423	17.02	<0.0001
	Great Blue Heron	3.9585657	14.49	0.2732
	Mallard Duck	4.878645	14.49	0.3367
	Bald Eagle	5.298324	14.49	0.3657

[1] Estimated environmental dose through all ingestion pathways deemed appropriate.

[2] Toxicity reference values for this screening risk assessment were No Observed Adverse Effects Levels (NOAELs)

Table 1-6b
Estimated Environmental Doses (EED), Toxicity Reference Values (TRV), and Hazard Quotients Based on Maximum Water, Sediment, and Tissue Concentrations

Constituent	Species	EED (mg/kg/d)[1]	TRV (mg/kg/d)[2]	Hazard Quotient
Arsenic	Mule Deer	0.009874	0.02	0.4937
	Great Blue Heron	0.0526695	5.14	0.0102
	Mallard Duck	0.79443	5.14	0.1546
	Bald Eagle	0.053268	5.14	0.0104
Boron	Mule Deer	0.253899	7.05	0.0360
	Great Blue Heron	0.7297908	28.8	0.0253
	Mallard Duck	10.504715	28.8	0.3647
	Bald Eagle	0.7482	28.8	0.0260
Chromium	Mule Deer	0.000094	4.43	<0.0001
	Great Blue Heron	0.2447766	1.0	0.2448
	Mallard Duck	0.8401817	1.0	0.8402
	Bald Eagle	0.242004	1.0	0.2420
Copper	Mule Deer	0.000094	0.12	0.0008
	Great Blue Heron	0.1368268	27.5	0.0050
	Mallard Duck	1.4192767	27.5	0.0516
	Bald Eagle	1.719912	27.5	0.0625
Lithium	Mule Deer	0.033383	2.37	0.0141
	Great Blue Heron	2.5868954	5.81	0.4452
	Mallard Duck	3.8992667	6.91	0.5643
	Bald Eagle	3.09276	5.2	0.5948
Mercury	Mule Deer	0.000009	0.17	0.0001
	Great Blue Heron	0.025917	0.45	0.0576
	Mallard Duck	0.0136319	0.45	0.0303
	Bald Eagle	0.0309432	0.45	0.0688
Molybdenum	Mule Deer	0.002069	0.12	0.0172
	Great Blue Heron	1.8011515	11.77	0.1530
	Mallard Duck	0.1209652	11.77	0.0103
	Bald Eagle	1.817184	11.77	0.1544
Selenium	Mule Deer	0.000094	0.05	0.0019
	Great Blue Heron	0.1404251	0.5	0.2809
	Mallard Duck	0.2114052	0.5	0.4228
	Bald Eagle	0.328992	0.5	0.6580
Zinc	Mule Deer	0.00094	17.02	0.0001
	Great Blue Heron	4.3188954	14.49	0.2981
	Mallard Duck	7.0203817	14.49	0.4845
	Bald Eagle	5.89872	14.49	0.4071

[1] Estimated environmental dose through all ingestion pathways deemed appropriate.
[2] Toxicity reference values for this screening risk assessment were No Observed Adverse Effects Levels (NOAELs).

Responses to Letter 1

1-7 As stated in the Draft SEIS, irrigated lands in Boulder Flat consist primarily of privately owned land within the TS Ranch controlled by ELLCO, a subsidiary of Newmont Gold Company; these lands are not under the BLM's jurisdiction or Barrick's control. Although Barrick delivers excess mine water to ELLCO for irrigation, ELLCO has its own water rights in Boulder Flat (see Appendix A, Betze Project Draft SEIS). ELLCO water rights allow for pumping ground water for irrigation to supplement or replace the water supply provided by Barrick after mine dewatering ceases at the Goldstrike Mine.

As described in Section 1.4.3.7 of the Draft SEIS, Barrick constructed three embankments across the Sand Dune drainage in Boulder Flat to manage storm water runoff. The area of saturation in Boulder Flat (including the area downstream from the Sand Dune, Green, and Knob springs) is located entirely on private land and is administered under agreements between Barrick and Newmont.

1-8 As explained in Section 3.3.8.3 in the Cumulative Impact Analysis (CIA) report (BLM 2000b), the BLM relied on the U.S. Fish and Wildlife Service (USFWS) during scoping to provide a list of constituents of concern for use in the Humboldt Sink loading analysis. In addition, the BLM in consultation with the USFWS agreed that this analysis would be based on approximations using available water quality data. The intent of the evaluation, as stated in the CIA, was to provide an approximation of the potential increases in loads to the Humboldt Sink resulting from mine discharges. The USFWS constituents of concern included mercury and selenium but not cadmium. As stated in the CIA, meaningful loads for mercury and selenium could not be calculated because the majority of the water quality data available for the mine discharge streams and Humboldt River stations indicated concentrations of these constituents below detection limits. Comparisons between upstream and downstream stations (Carlin, Rye Patch, and at a point of discharge into the Sink), suggest that concentrations of mercury and selenium do not increase substantially between Carlin and the Humboldt Sink.

As stated previously, cadmium was not included in the list of constituents of concern provided during scoping. In addition, cadmium concentrations for the mine discharge are not available because Barrick, in accordance with their NPDES permit, was not required to monitor for cadmium. Although cadmium was not included in the evaluation, it is likely that, as with other heavy metals included in the analysis such as copper and zinc, dissolved loads of cadmium (in the mine discharge) would decrease from precipitation and absorption processes during transport between the mine discharge point and the Sink.

Letter 1 Continued

1-9 The cumulative impact analysis lacks sufficient water quality, sediment, macro-invertebrate and fish tissue data. Concentrations of selenium that are acutely toxic to nesting waterfowl can accumulate quickly in closed systems such as the Humboldt Sink. The additional mine dewatering discharges to the agricultural run-off flowing to the Humboldt Sink increase the risk that metals such as cadmium and selenium could reach levels acutely toxic to wildlife. Biological samples from fish and wildlife using the Humboldt sink area should also be analyzed on a regular basis to determine if the uptake of bioaccumulative metals is increasing. At the very minimum, the operation of these dewatering facilities should incorporate a long-term monitoring plan to assess the cumulative impact of increasing cadmium, mercury and selenium loadings in the Humboldt Sink. Any monitoring plan to determine long term cumulative impacts should incorporate water and sediment chemistry, fish tissue analysis and macroinvertebrate bioassessments for monitoring points both above and below the mine operations and the Humboldt Sink.

Responses to Letter 1

1-9 As stated in the Draft SEIS, Barrick currently does not plan to discharge to the Humboldt River. However, should Barrick discharge to the Humboldt River, the BLM and NDEP would evaluate future monitoring requirements. Barrick has committed to contribute $25,000 during each future year of discharge for monitoring of fish and wildlife for uptake and bioaccumulation of metals in the Sink, in the event that Barrick reinitiates discharges.

Letter 2

United States Department of the Interior

U.S. GEOLOGICAL SURVEY
Reston, Virginia 20192

[illegible] 7:30

In Reply Refer To:
Mail Stop 423

MEMORANDUM

To: Kirk Laird, Bureau of Land Management
Elko, Nevada

From: James F. Devine James S. Bristow for
Senior Advisor for Science Applications

Subject: Review of Draft Supplemental Environmental Impact Statement for Barrick Goldstrike Mines Inc, Betze Project, Elko and Eureka Counties, Nevada.

The U. S. Geological Survey (USGS) has reviewed the subject Draft Supplemental Environmental Impact Statement (SEIS) and offers the following comments.

SPECIFIC COMMENTS:

Page 1-25, Section 1.5.2 Additional Infiltration or Injection:

2-1 "The hydrologic characteristics of the rocks situated east of the Post Fault are very different than the characteristics of the rocks in the highly transmissive area between the Post and Siphon Faults. Pumping experience demonstrates that wells in the highly transmissive area can produce from 2,500 to 3,000 gpm, while wells in the area east of the Post Fault produce only 50 to 300 gpm". This quoted information and that in the remainder of Section 1.5.2 is based on a study by Barrick Goldstrike Mines, Inc.

The information given in Table 3.2-3, "Summary of Hydrostratigraphic Unit Hydraulic Properties," (page 3-28); Figure 3.2-5, "Major Hydrostructural Features," (page 3-31); Figure 3.2-6, "Hydrogeologic Cross Section Through Ranch Dam and Betze Post Pit," (page 3-32); and text discussions on Marine Carbonate Rocks, Marine Clastic Rocks, and Volcanic Rocks (pages 3-28 and 3-29), however, indicates that the rocks in the area between the Post and Siphon Faults have lower hydraulic conductivity than the rocks adjacent (east and west) to the area between the faults. The pumping rates of wells in the area between the Post and Siphon Faults are reported to yield 10 to 1,000 gpm. This range falls outside the range (2,500-3, 000 gpm) given in page 1-25. The information on Table 3.2-3, Figure 3.2-5, Figure 3.2-6, and pages 3-28, and 3-29 is based on studies by McDonald Morrissey Associates (1996a, 1996b, and 1998) and Maurer et al (1996).

Responses to Letter 2

2-1 The discrepancies regarding the hydraulic conductivity and the range of well yields have been corrected to address the comment. Specifically, the conceptual hydrogeologic cross section provided in Figure 3.2-6 has been corrected to clearly illustrate that 1) the relatively higher permeability marine carbonate rock unit occurs within a compartment bounded between the Siphon and Post faults, and 2) the lower permeability marine clastic rock unit occurs east of the Post Fault. The discrepancy in Figure 3.2-6 did not affect the conclusions. The typical well yields for these two units have been revised (pages 1-25 and 3-28, Draft SEIS) to be consistent with the values presented in Tables 1 and 5 in McDonald Morrissey Associates (1998).

Letter 2 Continued

2-1 The discrepancies in well yields, hydraulic properties, and geologic attributes of the area between the Post and Siphon Faults and the hydrostratigraphic units that are adjacent (east and west) of the area between the faults as described by Barrick and McDonald Morrissey Associates need to be reconciled. All other discussions, analyses, and interpretations presented in the Draft SEIS that deal with ground-water hydrology (direction of ground-water movement, water-level drawdown and recovery, infiltration, recharge, discharge, and so forth) before, during, and after mining (including short- and long-term predictions of water-level drawdown and recovery) that may hinge on the noted discrepancies need to be reexamined for verification purposes. The discrepancies noted above could have introduced additional discrepancies elsewhere in the Draft SEIS.

Page 3-30, Siphon Fault:

2-2 The head difference between NA-50D and NA-7D indicates a barrier to flow only if the wells are open boreholes. If they are not open holes, then what are the depths of the screens and are they open to confined or unconfined aquifers? It would be helpful to plot these two wells on Figure 3.2-5 (page 3-31).

Page 3-30, Post Fault:

2-3 Again, it would be helpful to plot the two wells, PZ96-1D and PZ96-2D, on Figure 3.2-5 (page 3-31). Are these wells open boreholes?

Page 3-30, and 3-33, Geothermal System:

2-4 The temperature of the dewatering water needs to be included.

Page 3-34, Figure 3.2-7 Unconfined Ground-Water Levels, 1990-1991:

2-5 The previous section on page 3-30 explains in detail that the Siphon and Post faults are barriers to ground-water flow, yet the equipotential contours and flow lines in Figure 3.2-7 are drawn without regard to these faults. In fact, from Figure 3.2-7 it would appear that ground-water flows perpendicularly to both the Post and Siphon Faults. Clarification is needed.

Page 3-39, left column, second paragraph:

2-6 The hot springs mentioned here need to be labeled and plotted on Figure 3.2-9 (page 3-38). In addition, a map of the springs in Figure 3.2-9 with contours for water temperature would be helpful. This would also aid in later discussions regarding the source of water to the springs.

Page 3-47, Table 3.2-6 Drinking Water Standards Applicable to Ground Water:

2-7 The term 'semimetal' is incorrect. The chemically correct term for As and Sb is "metalloid" and Sc is a nonmetal.

Responses to Letter 2

2-2 & 2-3 The information requested regarding monitoring wells NA-50D, NA-7D, PZ95-1D, and PZ96-2D is provided in Table 2-2 below. Detailed information on the completion and location for all of the monitoring wells is provided in the monitoring reports submitted as part of the Boulder Valley Monitoring Plan (BVMP) (Barrick 1999a). The BVMP was incorporated by reference into the Draft SEIS. Figure 3.2-22 in the Draft SEIS shows the locations (without annotation) of all of the monitoring wells included within the BVMP and the areas and magnitude of drawdown and mounding as of the fourth quarter of 1998. The wells cited in the text were intended to provide an example of the variations in water levels that have been observed on either side of the Siphon and Post faults. Many other monitoring wells located on either side of these faults show similar trends and were used to develop an understanding of the hydrostratigraphic and hydrostructural conditions. Detailed hydrographs of monitoring wells distributed throughout the study area indicate that both the Siphon and Post faults inhibit ground water flow. Comparison of Draft SEIS Figures 3.2-5 (Hydrostructural Features) and 3.2-22 (Drawdown and Mounding, End of 1998) indicates the observed water level changes on either side of the faults. The Siphon Fault separates highly permeable Tertiary rhyolite rocks west of the fault from highly permeable Paleozoic marine carbonate rocks east of the fault. Well hydrographs indicate that water levels have risen in the rhyolite located west of the fault, due to infiltration through the TS Ranch Reservoir; at the same time, water levels have dropped due to dewatering in the carbonates east of the Siphon Fault (Barrick 1999a). Well hydrographs also record substantially different rates of water-level decline in Paleozoic rocks located on either side of the Post Fault; drawdown is much greater west of the fault than it is east of the fault (Barrick 1999a).

Table 2-2
Monitoring Well Descriptions

Monitoring Well	Collar Elevation (feet)	Screen Top Elevation (feet)	Screen Bottom Elevation (feet)	Geologic Unit
NA–50D	5,204.92	3,784.92	3,684.92	Marine Carbonate
NA-7D	5,109.60	4,689.60	4,649.60	Tertiary Volcanics
PZ95-1D	5,486.07	4,593.07	4,493.07	Marine Clastics
PZ96-2D	4,853.53	4,093.53	4,073.53	Marine Clastics

2-4 The temperature of the dewatering wells is discussed in the last paragraph on page 3-30 of the Draft SEIS. The majority of the dewatering water is from the carbonate aquifer that has a reported temperature at the wellhead of 140°F to 145°F. No changes were made to the SEIS in response to the comment.

2-5 Figure 3.2-7 represents pre-dewatering equilibrium conditions and depicts unconfined water levels on a regional scale. The faults are evident in Figure 3.2-7 in the two areas of the steepest hydraulic gradient in the center of the map. However, the faults are more obvious in Figure 3.2-22, which represents recent conditions.

Responses to Letter 2

2-6 There are actually four springs classified as either hot or warm in the hydrologic study area. Three of the hot and warm springs occur along the Humboldt River downstream from Carlin. The other hot spring occurs in the Susie Creek watershed. All of these springs are located a considerable distance outside of areas projected to be impacted by drawdown from Barrick's water management activities. For this reason, it is not necessary to discuss the characteristics of the springs, source waters, or present temperature contours for the purposes of the SEIS analysis. However, in response to the comment, the text (page 3-39) has been modified to list the specific hot and warm springs by Newmont spring designation number and incorporate them by reference. Refer to the Newmont South Operations Area Project Amendment Final EIS (BLM2002) for map locations.

2-7 The term "semimetal" is correct; it appears on published periodic tables, and is defined in college chemistry text books and glossaries. For example, The Purdue University on-line Glossary of Chemical terms (http://chemed.chem.purdue.edu/genchem/glossary/) defines a semimetal as "An element, such as silicon or arsenic, with chemical and physical properties that fall between the extremes associated with metals and nonmetals. Also called a metalloid."

Selenium (Se) falls in the nonmetals section of the periodic table, near the transition between metals and nonmetals, and one of two forms of Se has metallic properties. Therefore, Se could be considered a "semimetal" or metalloid. No changes were made to the SEIS in response to the comment.

Letter 2 Continued

Page 3-52, Betze-Post:

2-8 This page is a discussion of water chemistry from within the various lithographic units near Betze-Post. However, it refers to concentrations of Si, Ba, Cr, Cu, Ni, Ag, and Cd that are not included in Table 3.2-7 (page 3-49 and 3-50). If these elements are to be part of the discussion, then they should be included in Table 3.2-7.

Page 3-52, Alluvium:

2-9 It is unclear why ground-waters from the alluvium and the volcanic rocks are described as having no dominant cations. In the cation triangle on page 3-51, Figure 3.2-13, the alluvium waters plot on top of waters from the carbonate, volcanic and Carlin Formation lithologies.

Page 3-67, Table 3.2-14 Mean October Gains and Losses in the Humboldt River (cfs):

2-10 Are these numbers all plus (+) if not denoted by a minus (-)?

Page 3-70, Table 3.2-15 Historical Changes in Humboldt River Configuration:

2-11 It would be helpful to include post-1985 data in this table. Also, it is unclear where the locations are for the beginning and ending points that were used to measure river length between study sites shown in this table.

Page 3-75, right column, third paragraph:

2-12 It would be useful to add this information on the Lovelock and Rye Patch gages to Table 3.2-10, Table 3.2-11, and Table 3.2-12 on page 3-65.

Page 3-78, General Surface Water Quality:

2-13 Flow decreases are attributed to evaporation and diversions out of the river in this section; however on page 3-63 to 3-66, in a discussion on gaining and losing reaches of the Humboldt, infiltration into the alluvial aquifer is also noted as a cause of flow loss. Could some of the loss mentioned in this section be due to infiltration to ground-water? These two sections of the Draft SEIS should be consistent with one another.

Page 3-80, Table 3.2-20 Humboldt River Water Quality:

2-14 Again, the term 'semimetals' is incorrect.

Page 3-100, left column, first paragraph:

2-15 More information is needed on how the chemical and isotopic signature from monitored springs was used to assess the potential impact of ground-water drawdown to the springs.

Responses to Letter 2

2-8 As explained in the Draft SEIS (page 3-45, second to the last paragraph), Table 3.27, provides a summary of the ".... general ground water chemistry for the six hydrostratigraphic units for the region...." The region, as used in this context, refers to the entire hydrologic study area. Conversely, the water quality discussion provided under the heading "Betze-Post Pit Area" referenced in the comment is a summary of the water quality characteristics in ground water near the Betze-Post Pit, as provided in the Radian International, LLC and Baker Consultants, Inc., (1997b) report referenced in the Draft SEIS. No changes were made in response to the comment.

2-9 The text (page 3-52) describing volcanic rocks and alluvium has been revised to remove the statement regarding no dominant cation.

2-10 Tables 3.2-13 and 3.2-14 have been modified as a point of clarification in accordance with the comment.

2-11 Post-1985 data were not available at the time of document preparation and were not considered essential for this analysis. This information is not considered necessary to address the point of the discussion (that the river geometry has changed substantially over the last several decades prior to major mine discharge activities). With respect to the measurement points, the information presented in Table 3.2-15 is a summary derived from the Nevada Division of Wildlife baseline reports cited at the bottom of the table. For additional information on the measurement points, please refer to the cited sources.

2-12 This information was not included in the tables referenced in the comment, since it would encourage numerical comparisons that are not warranted. There are major differences in infrastructure and data availability from the flow conditions above Imlay and below Imlay, which would limit comparisons between the two areas. Therefore, the discussions of different river reaches are presented in the Draft SEIS to make the reader aware of these differences and to indicate that conditions below Imlay or Rye Patch have been generally inferred.

2-13 For consistency, the text was modified on page 3-78 of the Final SEIS to acknowledge that reductions along the river are attributable to diversions, reservoir management, evaporative losses, and seepage into the alluvial aquifer.

2-14 See the response to comment 2-7 above.

Letter 2 Continued

Page 3-113, Pit Lake Water Quality Modeling:

2-16 The modeling of major geochemical reactions needs to take into account evapoconcentration and resulting precipitation/complexation reactions.

2-17 The model of pit water quality for the first 233 years (that is, the filling phase of the pit) is inadequate. Model simulations of pit water quality for after the 233-years period, once a balance has been established between ground-water inflow and evaporation, are also needed.

2-18 Additionally, a model of the response of TDS (total dissolved solids) to evapoconcentration is needed, especially for when the pit has filled to its maximum level.

Page 3-114, Table 3.2-25 Median Predicted Betze-Post Pit Lake Chemical Concentrations:

2-19 Predicted concentrations of HCO_3 (bicarbonate) need to be added to the table. This is important because it could be the dominant anion.

Page 3-116, left column, third paragraph:

2-20 The discussion does not mention a decrease in O_2 in the bottom of the pit, due to degradation of organic matter. Is this expected and if not, why not?

Page 3-121, Projected Future Impacts:

2-21 There needs to be more discussion of projected future impacts. Based on Figures 3.2-23 through 3.2-26 (pages 3-87 through 3-90), ground water within the cone of depression will flow to the pit. Presumably, in premining times this water flowed to the Humboldt River. How is it that this change in ground-water flow direction will not affect baseflow to the Humboldt River?

Page 3-130, Figure 3.2-28 Estimated Average Annual Premine Loads at the Carlin and Rye Patch Gages:

2-22 What are the dates over which the annual averages have been calculated? These dates need to be added to this figure caption.

Page 3-131, left column, second paragraph:

2-23 Arsenic and boron form 'oxyanions' in solution, not 'negatively charged oxides'

Page 4-3, Chapter 4 Affected Environment and Environmental Consequences of the Proposed Action, 4.4 Vegetation, Including Threatened, Endangered, Candidate, or Sensitive Species, 4.4.2, Environmental Consequences, 4.4.2.1, Proposed Action:

2-24 The report states that approximately 18 acres of big sagebrush/grassland vegetation type would be disturbed by project construction, and that because the site would be reseeded (with an approved seed mix) "herbaceous species would re-establish rapidly, while shrub species would re-establish within 5 to 10 years."

Responses to Letter 2

2-15 As stated in the Draft SEIS, various factors were considered to identify areas where impacts to perennial surface waters potentially could occur. These factors included model results and reported descriptions and laboratory analyses from inventoried and annually monitored springs, including: 1) the drawdown projected from the ground water model; 2) information on the hydrogeologic setting (surface elevation, hydrostratigraphic unit, regional ground water elevations); 3) geochemical characteristics (particularly ionic concentrations); and 4) tritium concentrations. With respect to ionic and tritium isotope concentrations, in general, waters characterized with low ionic concentrations (<200 milligrams per liter [mg/L]) and higher tritium concentrations suggest that the perennial waters represent discharge from a local recharge source (or perched aquifer) with a very short residence time (few years or less). In contrast, waters with significantly higher ionic concentrations (>300 to 600 mg/L) and very low tritium concentrations (<1 TU) in this setting represent waters discharged from a more regional aquifer. The higher ionic concentrations and lower tritium concentrations reflect the longer flow path and residence time in the aquifer since initial recharge.

2-16 As discussed under the heading Pit Lake Water Quality (pages 3-110 to 3-116 in the Draft SEIS), the pit lake water quality modeling accounted for evapoconcentration, precipitation, and other chemical reactions.

2-17 The geochemical modeling was conducted to the point in time when the pit lake is projected to reach 95 percent of the final steady-state elevation (233 years after dewatering ceases). The 95 percent final steady-state criterion is considered by the BLM to provide a reasonable time frame for evaluation of trends in pit lake water quality. Because it is not possible to predict future climatic conditions, long-term prediction of water quality made over hundreds of years in the future should be considered uncertain approximations. However, these predictions do provide an indication of relative trends that are likely to occur in the pit lake water quality.

2-18 The modeling did account for evapoconcentration effects to the year 233. Regarding the duration of modeling and the suggestion to extend modeling past year 233, see the response to comment 2-17.

2-19 For pit lake water quality, the primary issues identified during scoping and by the interdisciplinary interagency team were: 1) potential risk to wildlife, waterfowl, and humans; and 2) potential degradation of the ground water aquifer downgradient of the pit. Bicarbonate was not considered a constituent of concern, and was therefore not considered relevant to the issues identified during scoping. Bicarbonate concentrations in the pit water are not relevant to the impact assessment, since bicarbonate is not considered a potentially toxic substance in water.

Letter 2 Continued

2-24 However, in the semiarid-arid climate of the proposed Betze project, rainfall and other precipitation is sparse and sporadic, and adequate soil moisture availability for seed germination and survival is not ensured. It is recommended that shrub saplings be planted at the disturbed site and watered or replanted until established. The shrubs will provide microhabitats to conserve water for easier sprouting of grass and forb seeds that should be sown among the established shrubs. Mulch, perhaps straw, should be applied to the revegetation site to conserve soil moisture. These precautions will help decrease the spread of rapidly establishing weedy species, such as cheatgrass and Russian thistle, at the site.

Thank you for the opportunity to review and comment on the Draft SEIS.

REFERENCES:

Commercial native seed sources and information on technology for revegetation of arid and semiarid regions with native plants can be found from **The Arboretum at Flagstaff, Flagstaff, Arizona. The website address is** http://www.thearb.org.

For further information about nonindigenous plant species and research and monitoring to combat them, reading of work done by the **Federal Interagency Committee for the Management of Noxious and Exotic Weeds** is suggested. The Committee's first report is cited as follows:

Westbrooks, R. 1998. *Invasive plants: changing the landscape of America: Fact book.* Federal Interagency Committee for the Management of Noxious and Exotic Weeds (FICMNEW), Washington, D.C. 109 pp.

Information can be accessed at the FICMNEW URL:
http://refuges.fws.gov/FICMNEWFiles/FICMNEWHomePage.html

Copy to: Office of Environmental Policy Compliance

Responses to Letter 2

2-20 Variations in oxygen content throughout the lake column over time (and seasonally) were simulated using the CE-QUAL-W2 model. Details regarding the pit lake modeling and results of the CE-QUAL-W2 modeling are provided in Radian International, LLC and Baker Consultants, Inc. (1997a). Based on the modeling results in the early years (prior to year 28), when there would be two separate lakes, both lakes are predicted to remain oxygenated throughout the year. After the two lakes merge to form a single lake (year 28), the pit lake water is projected to be well oxygenated with dissolved oxygen concentrations predicted to remain in the 3.5 to 8 mg/L range throughout the water column all year. The lower dissolved concentration is predicted to occur during late summer when decaying algae would reduce near surface oxygen concentrations. For additional details, refer to the Radian International, LLC and Baker Consultants, Inc. report (1997a) available at the BLM Elko Field Office.

2-21 As described in the Draft SEIS, water would flow into the pit and form a pit lake in the Betze-Post Pit after dewatering ceases. Water flowing into the pit would consist of ground water inflow, surface runoff from the pit walls, and direct precipitation onto the lake surface. The ground water inflow component would include two distinct water types: 1) warm, bicarbonate rich waters associated with the marine carbonate aquifer on the west side of the pit; and 2) cooler, more silicic water derived from the igneous intrusive, Carlin Formation, and marine clastic units exposed on the east and south sides of the pit. The marine carbonate aquifer has a higher transmissivity than the other units. Because of the higher transmissivity, the marine carbonate aquifer is anticipated to produce the greatest ground water inflow to the pit.

The comment suggests that water that would eventually flow into the pit lake previously discharged to the Humboldt River as baseflow. The inferred predewatering ground water elevations indicate that most of the water captured by the dewatering system, and ground water that would be discharged to the pit after mining ceases, previously flowed southwest toward Boulder Flat (Maurer et al. 1996, Plate 3). As shown in Table 3.2-4 (Draft SEIS), the Humboldt River loses an estimated 29,000 acre-feet/year of streamflow in Boulder Flat (McDonald Morrissey Associates, Inc. 1998). In other words, ground water captured by the mine (and later in the pit lake) in the Boulder Flat Hydrographic Area (HA) does not appear to be a source of baseflow to the Humboldt River. To the contrary, a portion of the streamflow along the Humboldt River through Boulder Flat infiltrates and recharges the ground water system. As presented in Table 3.2-4 (Draft SEIS) and discussed in recent USGS reports (Maurer et al. 1996; Berger 2000) most of the discharge from the bedrock and alluvial basin-fill aquifers occurs as evapotranspiration in lower Boulder Flat. Since the projected drawdown cones for the Goldstrike Mine do not intersect the Humboldt River, and ground water impacted by this drawdown previously did not discharge to the Humboldt River, ground water drawdown and inflow from the bedrock aquifers into the pit lake is not expected to reduce baseflow in the Humboldt River.

Responses to Letter 2

2-22 The premine water quality database for the Carlin and Rye Patch gage used in the analysis is discussed on page 3-129 of the Draft SEIS. A footnote has been added to Figure 3.2-38 for clarification.

2-23 Regarding the description on page 3-131 of the Draft SEIS: "... dissolved arsenic and boron generally form negatively charged oxides (Hem 1992; Drever 1997)," the term "oxyanion" would be correct in the context of a detailed discussion of the formation of the specific chemical complexes. However, in more general discussions (particularly to the layperson) the terms "oxide" or "negatively charged oxides" are commonly used. Regardless of the terms used, this modification to the text would not affect the discussion or conclusions of the analysis presented in the SEIS.

2-24 Barrick and ELLCO have withdrawn the pipeline application; therefore, no reclamation will be required.

Letter 3

United States Department of the Interior

FISH AND WILDLIFE SERVICE

NEVADA FISH AND WILDLIFE OFFICE
1340 FINANCIAL BOULEVARD, SUITE 234
RENO, NEVADA 89502-7147

Memorandum

To:	Field Manager, Bureau of Land Management, Elko Field Office, Elko, Nevada (Attn: Kirk Laird)
From:	Field Supervisor, Fish and Wildlife Service, Nevada Fish and Wildlife Office, Reno, Nevada
Subject:	Draft Supplemental Environmental Impact Statement, Betze Project, Barrick Goldstrike Mines Inc.

We have reviewed the Draft Supplemental Environmental Impact Statement (DSEIS) for the Betze Project dated September 2000. This DSEIS analyzes impacts associated with existing and future water management operations of Barrick Goldstrike Mines Inc. (Barrick) and a proposal to amend an existing right-of-way to allow installation of a second pipeline across public land. The following comments and recommendations are provided for your consideration.

GENERAL COMMENTS

3-1 The cover letter to this DSEIS indicates that the purpose of the DSEIS is 1) to re-analyze the effect of dewatering for the mine because the dewatering rates and total volume dewatered have been much greater than predicted in the 1991 EIS for the project and 2) to analyze impacts due to the proposed construction of a pipeline across a portion of federal land. With regard to dewatering, the cover letter states in the third paragraph that this document addresses issues and concerns raised over the last several years. The cover letter also states that by analyzing the impacts of Barrick's dewatering activities, the Bureau of Land Management (BLM) will propose mitigation measures to address the predicted impacts which are greater than previously discussed. We believe it is critical to minimize and mitigate impacts to resources to the maximum extent practicable. Because of the potentially far-reaching but uncertain impacts, it is extremely important that mitigation and monitoring activities be

Responses to Letter 3

3-1 Comment noted. The BLM and USFWS have completed informal consultation; see Appendix C.

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3-1 carefully considered. We ask to be included in any discussions and decisions on monitoring and mitigation where our trust resources may be potentially impacted.

SPECIFIC COMMENTS

CHAPTER 1. INTRODUCTION

3-2 Section 1.4.3. Water Management Operations. Page 1-16. The first paragraph states that Barrick lowered water elevations more than projected in 1990 and in half the time, so that pumping rates exceeded the projections presented in the 1991 Betze EIS. An explanation should be provided on why this was permitted to happen without further National Environmental Policy Act (NEPA) analysis and review. We are aware that Barrick's operations are currently located primarily on private lands. However, at the time BLM noted that dewatering rates and hydrologic conditions were substantially different from those anticipated in the Betze EIS, Barrick's operations were located entirely on public lands and were authorized under a Plan of Operations approved by the BLM.

3-3 Section 1.4.3.1. Wells and Collection System. Page 1-17. This section should state that BLM permitted conveyance of water in the existing pipeline pursuant to a right-of-way held by TS Ranch Joint Venture and the date of the right-of-way grant.

3-4 Section 1.4.3.9. Monitoring. Page 1-24. The last sentence in the third paragraph indicates that the Fish and Wildlife Service (Service) will prepare a report on results of the Humboldt River Aquatic Biota Monitoring study in the year 2000. This report will not be completed until sometime in the year 2001. Analytical results for samples collected in 1999 were not received until the end of August 2000. This coupled with the availability of left-over analytical funds, which are being used for the analysis of samples collected in 2000 from four sites, has delayed completion of the study. A U.S. Geological Survey (USGS) report dealing primarily with water quality issues in the lower Humboldt River Basin near the Humboldt Sink, as part of the above study, should be completed in early 2001. We hope to have a preliminary report on results of biota sample analyses, for samples that were collected in 1998 and 1999, completed by early 2001 and share those results with cooperators and interested parties shortly thereafter.

3-5 Section 1.6.1. Monitoring Programs. Page 1-26. The DSEIS states that the extent of the 10-foot drawdown contour would reach a maximum approximately 100 years post-mining. Barrick will continue spring and seep monitoring until 2030, approximately 20 years after mining is projected to be completed. The document needs to describe how impacts to seeps and springs will be detected during the 80 years when Barrick will have ceased monitoring, but when the cone of depression is still expanding. We believe monitoring for a longer period is

3-2 The following environmental reviews were conducted of Barrick's dewatering operations after the 1991 Betze Project EIS. In 1993, the increased dewatering rates were analyzed in an EA prepared in connection with Barrick's development of the Meikle Mine (BLM 1993a). In January 1994, BLM initiated consultation with the USFWS and submitted a Biological Assessment/Biological Evaluation (BA/BE) (BLM 1994b). The 1994 BA considered increased dewatering rates for an increased period of time. On April 14, 1994, the USFWS issued its Biological Opinion. This SEIS was initiated with a public scoping period commencing in August 1994. Dewatering operations have been extensively monitored and analyzed by the BLM, USGS, NDEP, and Nevada Division of Water Resources (NDWR) during the time this SEIS was in preparation. The results of the 1993-1994 analyses and this SEIS analysis have projected dewatering impacts similar to those projected in the original Betze Project EIS (BLM 1991b).

3-3 The text (page 1-17) has been modified to reflect this information.

3-4 Comment noted.

3-5 The Record of Decision (ROD) for the initial Betze Project EIS (BLM 1991d) required the establishment of an interest-bearing, $250,000 account to provide for payment of the direct costs of conducting long-term monitoring of the project (after 2030). As ofJune 28, 2002, the value of this long-term monitoring account had grown to $477,144. The ROD also specified that Barrick would establish a $1,000,000 interest-bearing environmental contingency fund account "for the purpose of funding the review, monitoring, and mitigation of adverse environmental impacts associated with its project not evident during the course of operations or following reclamation." As ofJune 28, 2002, the value of the contingency fund had grown to $1,835,199. Under the current agreements, both of these funds will continue to grow and be available to fund long-term (post-Barrick) monitoring.

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3-5 necessary.

3-6 Section 1.6.2. Mitigation Measures. Page 1-27. This section should state the extent to which the monies spent on mitigation measures to date have mitigated for impacts that have occurred or are projected to occur.

3-7 We desire additional information on the fund to research issues related to post-mining pit water quality that is mentioned here. First, please provide titles and a very brief description of the two studies funded to date. Second, are a portion of the funds to be held for actual monitoring of the pit lake following its formation or are all monies to be expended in predictive studies?

3-8 Long-term monitoring of water quality, aquatic community development, uptake of metals and trace elements in the food chain, and wildlife use of the pit lake is needed.

3-9 Section 1.7.1.2. Other Projects and Activities. Page 1-34. A long-term water supply for restoration of Argenta Marsh could be provided by Barrick after cessation of mining by the purchase of water rights in the amount that will annually evaporate from the pit lake (i.e., 2,900 acre-feet). These water rights could then be donated to the Nevada Division of Wildlife for maintenance of marsh habitat at Argenta Marsh or other sites in the Humboldt River Basin and be considered mitigation for the evaporative loss from the basin. This should be considered as a mitigation measure in section 3.2.3.

CHAPTER 2. PROPOSED ACTION AND ALTERNATIVES

3-10 Section 2.1. Proposed Action (Buried Pipeline). Table 2-1. Page 2-3. The seed mixture should include non-natives only when they are needed for soil stabilization early in revegetation, and where they would naturally die out later.

CHAPTER 3. AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES FOR WATER MANAGEMENT OPERATIONS

3-11 Section 3.0. Affected Environment and Environmental Consequences for Water Management Operations. Page 3-1 to 3-2. It is not clear why Air Quality and Hazardous or Solid Wastes were eliminated as nonrelevant when the period of mining would be extended beyond that analyzed in the earlier EIS, the pit would be expanded, and additional materials would be placed on a waste rock dump(s) and in a tailings facility. Also, mercury emissions from stacks at the mine have been ongoing and are now reported under Toxic Release Inventory requirements. The media has reported significant estimated emissions from this Barrick facility. The potential effects of these emissions have not been analyzed in previous NEPA documents. Mercury, especially in its organic (i.e., methyl) form is highly toxic, is readily biomagnified through the food chain, and may have adverse effects on fish and wildlife

3-6 The BLM has used the Mule Deer Habitat Fund provided by Barrick for several projects, including rehabilitation of areas burned in wildland fires. Deer appear to be heavily using these areas. NDOW has found that deer in the area rely heavily on these rehabilitated areas. (NDOW 1998d).

The BLM has installed water guzzlers using the Wildlife Water Source Fund provided by Barrick. These guzzlers have resulted in an increased distribution of upland game species, primarily chukar, and upland species are remaining at higher elevations for longer periods of time. Although NDOW does not have specific statistics for the wildlife use associated with the guzzlers funded by Barrick, NDOW has indicated they are very satisfied with the overall success of these water sources (Ken Gray, NDOW, personal communication January 26, 2001).

3-7 Two studies were conducted to research post-mining pit water quality issues:

- Investigations of Pit Water – Pit Wall Interactions in Nevada Precious Metal Mines. University of Nevada and University of Alabama. December 1, 1996.
- The Aqueous Geochemistry of Arsenic. University of Idaho and Stanford University. October 8, 1999.

These two reports are available from the BLM Elko Field Office.

3-8 Comment noted.

3-9 As described in Section 3.2.2.2 of the Draft SEIS and in the response to comment 2-21, dewatering effects, including evaporative losses from the pit lake, are not projected to affect Humboldt River flows. There is no connection between the Argenta Marsh restoration project and mitigation for evaporation from the pit lake surface. Also, Barrick is committing to off-site habitat enhancement for Lahontan cutthroat trout (LCT) streams and associated riparian habitat (see Appendices A and B of the Final SEIS.

3-10 See the response to comment 2-24.

3-11 The Proposed Action did not include pit, waste rock, or tailings expansions on public land. To the extent such activities would occur in the future on private lands, they are beyond the scope of this SEIS.

The Goldstrike processing facilities from which mercury emissions were reported under the Toxic Release Inventory are located on private lands and were not part of the Proposed Action. It should be noted, however, that mercury air emissions are regulated by the NDEP under authority delegated by the U.S. Environmental Protection Agency (USEPA) under the Clean Air Act.

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3-11 resources. We recommend efforts to reduce emissions and monitoring of actual emissions as well as environmental monitoring in downwind and background areas.

3-12 Section 3.2.1.2. Hydrologic Study Area for Dewatering and Localized Water Management Activities, Surface Water, Surface Water Flows and Channel Characteristics, Local Watersheds. Pages 3-43 to 3-44. The text indicates that there are periods of no flow in portions of Suzie Creek. These statements do not appear to be consistent with Figures 3.2-1 and 3.2-9, which show Suzie Creek to be perennial throughout.

3-13 Section 3.2.2.1. Impacts from Mine Dewatering and Localized Water Management Activities, Impacts to Groundwater Levels, Impacts to Date (1991 - 1998), Figure 3.2-22. Page 3-84. More monitoring wells to the north and northeast of the pit may be needed to adequately monitor groundwater levels in possible areas of impact to Lahontan cutthroat trout (LCT), Columbia spotted frog, and springsnails.

3-14 Section 3.2.2.1. Impacts from Mine Dewatering and Localized Water Management Activities, Water Quality Impacts, Pit Lake Water Quality, Pit Water Balance and Final Pit Lake Configuration. Page 3-111. The ultimate pit bottom elevation of 3,990 feet above mean sea level (amsl) for the West Bazza-Screamer Area and the elevation of the rise between the East and West Areas in the text is not consistent with the information provided in Figure 3.2-33.

3-15 Section 3.2.2.1. Impacts from Mine Dewatering and Localized Water Management Activities, Water Quality Impacts, Pit Lake Water Quality, Pit Lake Water Quality Modeling Results. Pages 3-113 and 3-114. It would be helpful to provide information on the range of values predicted for various measurements of water quality. For example, are they in the 20 to 50 percent range around the values reported or are they in the range of orders of magnitude? Also, the text indicates a potential for initial pH to be 4, but medians in Table 3.2-25 at year 10 are about pH 8.

3-16 In Table 3.2-25, mercury is not expected to be detected in water, but the lack of detection in water at the detection limit used might not adequately predict mercury in biota because of high rates of biomagnification. Adverse effects to biota may be found when they contain elevated concentrations. Slightly elevated concentrations of selenium are predicted in pit lake water. Selenium may be bioaccumulated in biota and adverse effects in biota may occur when elevated concentrations are present. It should also be noted that the predicted silver concentration is more than three times higher than the aquatic life standard.

3-17 The continued predicted increasing degradation of water quality in the pit lake for the foreseeable future (i.e., 233 years) is of considerable concern and should not be dealt with lightly.

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3-12 Figures 3.2-1 and 3.2-9 have been modified to show that the lowermost reach of Susie Creek is ephemeral.

3-13 As shown in Figure 3.2-22, and presented in the quarterly reports for Barrick's Boulder Valley Monitoring Plan, Barrick has installed and monitors a series of wells located to the north and east of the Betze-Post Pit. Fourteen wells were installed as recommended in conservation recommendation No. 1 of the USFWS Biological Opinion (USFWS 1994). Also, it should be noted that Barrick has installed two additional monitor wells north of the mine in the Antelope Creek area. In addition, as described in the Mitigation Plan (Appendix A), if the current groundwater monitoring system indicates that the cone of depression is advancing toward the LCT streams in the Maggie Creek basin (Beaver, Coyote, Jack, and Little Jack creeks), Barrick will install and monitor additional monitoring wells to measure changes in water levels between the mine and the LCT streams. The Long-term Environmental Monitoring and Mitigation Fund also would be available for use in establishing new monitoring points (such as monitoring wells) if the drawdown were to unexpectedly advance toward LCT habitat or other sensitive species.

3-14 In response to the comment, the elevations of the ultimate pit surface have been rechecked, and the numbers (page 3-111) have been modified, as necessary. It is important to note that Figure 3.2-33 illustrates the pit configuration using a single, representative cross-section. The text, however, is based on elevations provided in a detailed contour map of the entire ultimate pit surface that was used for the pit lake study (Radian International, LLC and Baker Consultants, Inc. 1997a). Since the cross-section was not drawn to intersect the lowest elevation at each of the three points discussed in the text, the elevations illustrated in Figure 3.2-33 and discussed in the text on page 3-111 do not correlate.

3-15 The text and tables in the SEIS are intended to provide a brief summary of the results and conclusions of the pit lake study (Radian International, LLC and Baker Consultants, Inc. 1997a). As stated in the SEIS, the pit lake water quality simulation results are presented as a probability distribution and include predicted concentrations at 5 percent, 50 percent (or median), and 95 percent probability for selected time frames. Providing a complete set of results with these probabilities (for different time intervals and different segments of the pit) would have required the addition of several pages of tables within the SEIS, but would not have changed the conclusions stated in the SEIS. In addition, the complete pit lake study was incorporated by reference in the SEIS and is available for review at the BLM Elko Field Office. With respect to pH, as explained in the SEIS, the median predictions at year 10 indicate that the two initial (east and west) pit lakes would have a near neutral pH. However, predictions at the 5 percent confidence level indicate that the pH at year 10 would be less than 4. In other words, the predictions indicate that water within the pit is unlikely to be acidic. However, there is a small chance that the pit lake water could be acidic in the early years of formation until inflowing ground water could add sufficient buffering capacity to neutralize the pit water.

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3-16 It has long been recognized that mercury and selenium tend to bioaccumulate in organisms. In fact, water quality criteria for these two metals already take into account their tendency to bioaccumulate. However, there is a general consensus that water-borne selenium concentrations, for example, are a poor predictor of toxic effects (USEPA 1998). A study by Canton and Van Derveer (1997) of the Arkansas River in Colorado (which receives discharge from historical mining operations) found no relationship between water-borne selenium concentrations and fish community health, even when selenium concentrations exceeded the acute criterion of 20 micrograms per liter (µg/L). Therefore, the current acute and chronic criteria for selenium and mercury should be sufficiently protective of aquatic organisms.

Silver is a hardness-dependent metal. The predicted median hardness of the pit lakes (from 10 to 233 years) varied from about 321 to 558 milligrams per liter (mg/L) as $CaCO_3$. For any given Betze Pit lake scenario, the median predicted silver concentration presented in Table 3.2-25 is less than the Nevada silver acute aquatic life standard. For example, in the West Pit Lake at 26 years, the predicted silver concentration is 0.028 mg/L; the standard is 0.0374 mg/L.

3-17 The comment is noted; no change was made.

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3-18 Section 3.2.3.1. Mine Dewatering and Localized Water Management Activities. Pages 3-136 and 3-139. We are concerned that the proposed mitigation measures for perennial springs, seeps, and streams could have adverse consequences on some biological resources (although they may benefit others) during the period of project impact. Potential measures listed are: 1) Augmenting flow, and 2) on-site or off-site improvements of springs or streams to enhance water yield. Developing other nearby springs or streams may cause adverse impacts on biological resources as well. Implementation of a mitigation plan may require NEPA compliance if it would result in any adverse impacts, and the final SEIS should so state.

3-19 In cases where flow is augmented, the quality of the water to be used must be first assessed and be of equal quality, including both major and minor constituents, to that of the original flow.

3-20 We are also concerned that by the time impacts to springs are detected through annual monitoring, sensitive biological resources (such as springsnails) may already have been lost. More frequent monitoring of specific springs may be warranted.

3-21 We also recommend mitigation of the evaporative loss of water from the pit lake. This could be accomplished by the purchase of water rights and their donation to the Nevada Division of Wildlife for the purpose of providing habitat for wetland dependent species in the Humboldt River Basin.

3-22 Section 3.3.2.1. Impacts from Mine Dewatering and Localized Water Management Activities. Page 3-153. As discussed in this section, "...limitations inherent in hydrologic modeling and the uncertainty regarding the hydrologic interconnection between the streams and the regional water system, the actual extent and magnitude of impacts to riparian vegetation are uncertain." We are concerned with the potential impacts to riparian vegetation and the resultant impacts to listed species, particularly LCT.

3-23 Section 3.3.2.1. Impacts from Mine Dewatering and Localized Water Management Activities. Page 3-154. The document states that noxious weed species could become established in stream channels affected by ground water drawdown, but that riparian vegetation would likely dominate these areas after water levels return to premine conditions. We do not agree with that conclusion. There are many cases to illustrate that noxious weed species, once established, will dominate a site until effective control measures are implemented. Mitigation measures should be developed to ensure that noxious weed species do not become established in riparian areas.

3-24 Section 3.4.2.2. Impacts from Mine Dewatering and Localized Water Management Activities. Pages 3-172 and 3-175. The paragraph beginning at the bottom of column one on page 3-172

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3-18 The BLM acknowledges that further analysis and regulatory permitting may be required for project-related mitigation measures that may result in effects to biological resources.

3-19 Regarding spring and stream flow augmentation water quality, any water used for flow augmentation would be required to meet the water quality criteria for the applicable beneficial uses. Under most circumstances, it may not be feasible to provide supplemental waters that exactly match the ionic and trace metal concentrations of the original perennial waters. The compatibility of waters (that meet the applicable water quality standards for designated beneficial uses) to support the survival of specific organisms is unknown. Text has been added (page 3-217) to Section 3.6.4 (Threatened, Endangered, Candidate, and Sensitive Species, Residual Adverse Impacts) of the Final SEIS to acknowledge that residual impacts could occur to special status species (if flow augmentation were required, and the physical and chemical characteristics of the water used to augment flows were incompatible with survival of specific sensitive organisms). Note that Barrick's Mitigation Plan (Appendix A) includes a $50,000 research grant to study springsnails.

3-20 Springs are monitored annually with field observations and flow measurements conducted during the low-flow period in late September or early October. It is important to understand that spring, seep, and perennial stream flows in the region generally exhibit dramatic seasonal variations. Spring flows in winter, spring, and early summer are strongly influenced by seasonal precipitation. As a result, flow measurements recorded during these periods typically represent a combination of surface water runoff and ground water discharge. Conversely, spring flow measurements recorded during the late summer through early fall period typically represent or approximate baseflow conditions (measurement of the ground water discharge component with minimal influence from surface runoff). For these reasons, the BLM believes that the annual flow measurements taken during the late summer or early fall are the most useful for either verification that a water source has not been impacted or detection of potential impacts to perennial water sources.

It should be noted that monitoring of ground water elevations over the past decade has indicated that expansion of the cone of drawdown into new, distal areas has occurred at a relatively slow rate. The goal of the ground water and surface water monitoring network is to detect drawdown and potential impacts to areas prior to the impacts actually occurring within specific sensitive resource areas. Using this approach, impacts to sensitive water-dependent resources can be more effectively mitigated.

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3-21 The focus of the original Betze Project EIS and the SEIS was to evaluate potential impacts associated with mine dewatering and water management activities on water-dependent resources. As summarized in the response to comment 2-21, ground water drawdown and inflow to the pit are not expected to reduce baseflow in the Humboldt River. In addition, as explained in the response to comment 3-5, funds have been established for use in monitoring and mitigating long-term impacts to water-dependent resources resulting from long-term residual drawdown that results in part, from pit lake evaporation. Barrick also has established a Riparian Habitat Mitigation Fund, which was valued at $1,059,635 as ofJune 28, 2002. Since mitigation measures have been established to offset anticipated or unanticipated impacts to water resources, additional mitigation for evaporative loss from the pit lake is not warranted. In addition, the Nevada State Engineer is solely responsible for administering water rights in the State of Nevada, and therefore, the BLM has no authority over the administration or transfer of water rights.

3-22 As explained in the response to comment 1-2, based on the analysis in the Betze Project SEIS the areal extent of impacts is projected to be less than originally predicted in the Betze Project EIS and the Meikle Mine BA/BE. Barrick's dewatering operations are not projected to affect LCT. In addition, as discussed in the responses to comments 3-5 and 3-21, mitigation funds established by the ROD for the Betze Project (BLM 1993d) address both anticipated and unanticipated impacts to water resources. Please also see the details provided in the Mitigation Plan (Appendix A of the Final SEIS) and the Upper Willow Creek Habitat Enhancement Plan (Appendix B of the Final SEIS).

3-23 Text regarding the potential establishment of noxious weeds and noxious weed monitoring measures has been added to Section 3.3.2.1 (page 3-154), Impacts from Mine Dewatering and Localized Water Management Activities, and Section 3.3.3 (page 3-157), Monitoring and Mitigation, respectively.

3-24 The intent of the information presented in the referenced paragraph was to provide an overview of the potential effects to terrestrial wildlife species from a reduction in surface water resources and associated riparian habitats. The common avian species that may occupy these areas were identified in Section 3.4.1 (Affected Environment) and were not repeated for the impact analysis. The species described in the SEIS "affected environment" section, including resident and migratory raptors, songbirds, waterfowl, shorebirds, and upland game birds, were analyzed in the impact assessment presented in Section 3.4.2.2 of the SEIS. In addition to the species information presented in the SEIS text, Appendix E of the SEIS contains detailed species-specific data from the Nevada Division of Wildlife on waterfowl species recorded for the dewatering areas and the Humboldt River drainage.

Regarding the comment on "specific information on sensitive species," when site-specific data were available for both aquatic and terrestrial special status species addressed in Section 3.6.2, the data were presented in the SEIS. As discussed in the SEIS, it was assumed that several special status species could occur in the dewatering area and along the Humboldt River, although they may not have been detected there, and the impact analysis was based on this assumption. A BA/BE under Section 7 of the Endangered Species Act was prepared and submitted to the USFWS. The USFWS' memorandum of concurrence with the determinations of the BA/BE is included in Appendix C.

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3-24 describes impacts that may occur to a species as a result of loss of surface water. We concur with the conclusions expressed in this paragraph. We are particularly concerned with species trending toward listing and with migratory birds, but the document does not provide enough information on the species of birds that breed in this area or specific information on sensitive species that occur there.

3-25 In the second to last paragraph on this page the assumption is made that the riparian communities are currently at carrying capacity. The DSEIS earlier indicated that riparian conditions in many areas were poor (section 3.3.1.1), including areas outside of the predicted area of impact. Therefore, if conditions were improved (e.g., through reduced grazing) the carrying capacity could be increased in these areas. Mitigation of the adverse effects of lowered groundwater in predicted areas of impacts could be conducted in these predicted non-impacted areas. This should be done prior to additional dewatering impacts so that mammals and birds could move to improved habitat in mitigation areas. The Wetland Mitigation Fund (section 1.6.2, page 1-27) could be used for this purpose.

3-26 The extent to which existing committed protection measures referenced on page 3-175 would partially mitigate the anticipated impacts to terrestrial wildlife resources would depend on the extent to which the lost habitat would be replaced. We recommend the document provide information on the extent to which this would occur.

3-27 The last sentence in the paragraph dealing with songbirds stated that "Loss of an active nest site, eggs, young, or adult birds from changes in water availability would be in violation of the [Migratory Bird Treaty] Act..." We disagree; this would not be a violation.

3-28 Section 3.4.2.3. Impacts Associated with the Pit Lake. Page 3-176. We do not agree with
selection of species for the pit lake risk assessment. We recommend the inclusion of one or
more aquatic species such as a duck and/or grebe and the results of the assessment with the use
3-29 of such species. We also recommend that the risk assessment include exposure through the
ingestion of food from the pit lake because some constituents may bioaccumulate or
biomagnify through the food chain, leading to increased exposure. The selenium concentration
3-30 in water (i.e., 6 μg/L from Table 3.4-1) is above the predicted lower effect concentration for
sensitive species when bioaccumulation through the food chain is considered.

3-31 Section 3.4.2.4. Impacts to the Humboldt River. Page 3-178. Information in the last paragraph of this section indicated that water quality in the Humboldt River would be improved during periods of the mine's discharges. This information has not been documented in previous sections of the DSEIS. To the contrary, information was presented on increased loads of various constituents during periods of mine discharge.

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3-25 Comment noted. Note that the Upper Willow Creek Habitat Enhancement Plan (see Appendix B of the Final SEIS). It would provide off-site riparian habitat prior to the occurrence of an impact. Barrick also has established a Riparian Habitat Mitigation Fund, which was valued at $1,059,635 as of June 28, 2002.

3-26 It is not possible to specifically quantify the future extent of lost or disturbed terrestrial habitats to be affected by changes in water availability. The intent of this summary statement was lo show that Barrick and the BLM have developed extensive monitoring and mitigation programs to address these resource issues. As stated in the SEIS, existing programs and committed measures to implement future programs would offset direct and indirect impacts to terrestrial species from the loss or reduction of available water, riparian habitats, and wetland communities. Monitoring and mitigation measures are identified in Appendix A of the Final SEIS, Mitigation Plan, and in Appendix B, the Upper Willow Creek Habitat Enhancement Plan.

3-27 In response to the comment, the text (page 3-175) has been revised to remove the statement regarding the Migratory Bird Treaty Act.

3-28 Water ingestion NOAELs for a duck or grebe are not included in Sample et al. (1996). However, there are NOAELs for a great blue heron; these NOAELs have been added to Table 3.4-1 and the text (page 3-176) appropriately revised.

3-29 As stated in the Draft SEIS, it was assumed that primary production in the pit lake would be so low as to preclude use of the lake as a substantial food source by wildlife. The BLM believes this is a reasonable assumption.

3-30 The selenium concentration of 5 µg/L is the USEPA's criterion continuous concentration (CCC), or chronic criteria. It does not represent a "lower effect concentration" as stated in the comment. In fact, this CCC is based on field studies from Belews Lake, North Carolina, which showed no effects to fish in an area of the lake where the selenium concentration was at this level. As indicated in the response to comment 3-16, more recent studies indicate that exposure to much higher concentrations does not cause significant effects. Therefore, the BLM does not believe that the predicted concentration of 6 µg/L is of particular concern.

3-31 The issue of loading is a concern for the Humboldt Sink and not the river itself. As stated on page 3-128 of the Draft SEIS, assuming future mine discharges would be in accordance with permit limitations, impacts to water quality in the river are not anticipated. The water quality impact analysis provided in Section 3.2 focused on the potential for degradation of water quality and increased chemical loading to the Humboldt River and Humboldt Sink. The water quality analysis did not evaluate the potential for improved river water quality resulting from mine discharges. Therefore, for consistency with Section 3.2, the statement on page 3-178 regarding improved water quality during periods of mine discharge referenced in the comment was removed in the Final SEIS.

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3-32 Section 3.4.2.5. Impacts to the Humboldt Sink, Table 3.4-6. Page 3-186. The data presented here only deals with dissolved constituents. It is possible for some constituents to be transported in the total fraction (i.e., non-filtered samples). This should also be acknowledged in the section on water quality (starting on page 3-128).

3-33 Section 3.4.3. Monitoring and Mitigation. Page 3-187. No mention is made of continued support on the Service's Humboldt River Aquatic Biota Monitoring study. We recommend that continued support be required. We request the opportunity to discuss this issue with you following completion of a preliminary report dealing with biota samples collected in 1998 and 1999 and completion of the USGS report on their portion of the study.

3-34 Section 3.5.1.4. Humboldt River Basin. Page 3-192. At the end of the second full paragraph on this page, please note that additional samples were also collected at some sites (i.e., Carlin gage to Golconda) in the year 2000 as part of this monitoring program.

3-35 Section 3.5.2.2. Impacts to the Humboldt River. Pages 3-194. The first paragraph on page 3-194 discusses effects of increased flows on fish, both native and introduced. The document states that increased flows would particularly benefit some of the introduced game species. We believe improved reproduction and/or survival of introduced species would result in increased competition with and/or predation on the native fishes. Contrary to the statement in paragraph two on page 3-194, we would expect that expanded populations of introduced game species would affect the composition of the fish community in the river. Appropriate monitoring and mitigation for this impact should be developed.

3-36 Section 3.5.3. Monitoring and Mitigation. Page 3-195. The document states that if native fish habitat in the Boulder Creek and upper Antelope Creek drainages is impacted due to dewatering activities, off-site enhancement mitigation may occur. Off-site mitigation could include fencing to limit grazing in areas near upper Rock, Toe Jam, and upper Willow Creeks. Improvements in riparian vegetation and streambank stability in these areas could also occur. Please keep in mind that these areas may contain LCT and any impacts to LCT, either direct or indirect, beneficial or adverse, should be addressed under the Endangered Species Act's section 7 consultation process.

3-37 Section 3.6.1.2. Aquatic Species, Springsnails. Page 3-208. This section could be improved by adding quantification. We recommend the document state how many springs and seeps are located within the maximum model-predicted 10-foot drawdown contour, how many of those springs and seeps have been surveyed for springsnails, and what percentage of springs and seeps with suitable springsnail habitat has been surveyed.

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3-32 A more detailed description of the database used in the loading evaluation is provided on pages 3-90 and 3-91 of the Cumulative Impact Analysis (BLM 2000b). Concentrations for the river were calculated using available dissolved constituent concentrations. Concentrations used for the mine discharges are reported as either dissolved, total recoverable, or total. However, regardless of whether the concentrations were reported as dissolved, total recoverable, or total, for the purpose of this analysis they were assumed to be dissolved loads to allow for comparison to dissolved loads calculated in the Humboldt River. This assumption is reasonable, since ground water discharged from the mines is dominated by the dissolved fraction of constituents. In addition, since total recoverable and total loads include the dissolved fraction, the loads calculated for the mine discharges are considered conservative when compared to the dissolved loads in the river.

3-33 Please see the response to comment 1-9 regarding Humboldt River monitoring. Barrick will make a $25,000 contribution to Humboldt River monitoring during each year that it discharges water to the Humboldt River.

3-34 A sentence has been added (page 3-193) that indicates additional macroinvertebrate samples were collected in 2000 at some sites from the Carlin gage to Golconda.

3-35 A 0.8- to 1-foot increase in river depths could result in a wider dispersal of nonnative fish in localized areas of the river; however, these flow changes are within the typical fluctuations that presently occur. For this reason, no dramatic changes in fish composition are anticipated. Even if fish monitoring were conducted in the Humboldt River, it would be difficult to identify changes in fish populations that are not considered natural fluctuations.

3-36 The effects of implementing off-site enhancement activities on LCT and other listed species are addressed in the BA/BE prepared for the U.S. Fish and Wildlife Service, in compliance with the Endangered Species Act. The USFWS' memorandum of concurrence with the determinations of the BA/BE is provided in Appendix C. Refer to Appendix A of the Final SEIS, Mitigation Plan, for a description of mitigation measures for sensitive species.

3-37 Figure 3.6-2 shows known springsnail locations in relation to the 10-foot drawdown contour. Six known springsnail sites in upper Antelope Creek are located just outside the 10-foot drawdown contour. However, due to their close proximity to the contour, the impact analysis identifies potential effects on water levels in these springs. Mitigation is provided by a $50,000 research grant to study springsnail relocation techniques.

Field Manager

File No. BLM 6-4
EC 32.7

3-38 3.6.2.1 Terrestrial Species. Page 3-210. The document states that BLM, as the Federal lead agency, is currently working with the Service under the informal section 7 consultation process for Barrick's water management operations. As stated in the DSEIS, on Summary Page i, the Service issued a biological opinion, dated April 14, 1994 (file number 1-5-94-F-81) which concluded that Barrick's dewatering operations to an elevation of 4160 feet amsl would not likely jeopardize LCT. However, the project has now changed. As indicated on page 1-29, Barrick plans to lower the ground water level in the area of the Betze-Post and the Meikle mines to 3,576 feet amsl. The maximum drawdown is now proposed as 1,689 feet rather than 1,160 feet. In addition, mining would continue until 2011 as opposed to 2001 as addressed in 1994, and a greater volume of water would be pumped from the area (285,000 acre-feet to 1,085,000 acre-feet). As a result, the Service believes it is appropriate for BLM to consult further under the Endangered Species Act, as amended.

3-39 Section 3.6.3.2. Spotted Frog. Page 3-216. The document states that if potential habitat for the spotted frog in the upper Antelope Creek drainage is impacted due to dewatering activities, off-site mitigation may include improving riparian vegetation and streambank stability in upper Rock, Toe Jam, and upper Willow Creeks. Please keep in mind that these areas may contain LCT and any impacts to LCT, either direct or indirect, beneficial or adverse, should be addressed under the Endangered Species Act's section 7 consultation process.

3-40 Section 3.6.3.3. Springsnails. Page 3-216. This section discusses flow augmentation or relocation of springsnails if necessary, but does not mention the need to ensure that water used for flow augmentation and springsnail receiving waters must be of equal quality, including both major and minor constituents, to that of the original flow or springsnail habitat.

3-41 Section 3.7.1. Affected Environment. Page 3-221. Information provided at the end of the last paragraph indicates that no livestock grazing occurs in the Humboldt and Carson Sink areas because they are associated with Wildlife Management Areas (WMA). This is not entirely accurate. We have seen cattle or evidence of the recent presence of cattle at least on the northern portions of the Humboldt WMA in recent years. See also a similar statement in section 3.7.2.2.

3-42 Section 3.7.2.1. Impacts from Mine Dewatering and Localized Water Management Activities. Pages 3-222 and 3-223. Based on a comparison of Figures 3.7-1 and 3.7-2, perennial waters within the Maggie Creek Watershed Restoration Project area could be impacted by the proposed drawdown. A discussion should occur on how this will impact LCT restoration efforts in this area.

3-38 A BA/BE was submitted to the USFWS that addresses Barrick's water management operations. The BA/BE also addresses impacts of other interrelated projects, water management operations of other mines and other activities potentially affecting baseline conditions, i.e., water use, grazing, culverts, roads and restoration of the Argenta Marsh. The USFWS' concurrence with the determinations of the BA/BE is provided in Appendix C.

3-39 See the response to comment 3-36 regarding off-site mitigation and comment 3-38 for a description of the Section 7 consultation process.

3-40 See the response to comment 3-19 regarding the quality of water used for flow augmentation.

3-41 Text (page 3-221) in Section 3.7.1, Affected Environment, has been revised to indicate that no authorized livestock grazing occurs in the Humboldt Wildlife Management Area. However, unauthorized grazing has occurred in the northern portion of the Humboldt Wildlife Management Area in recent years (Gephardt 2001).

3-42 As described in Section 3.5.2.1 of the Draft SEIS, based on the results of the hydrologic modeling and geological characteristics of the various water resources, ground water drawdown is not expected to affect perennial streams and springs on the eastern slope of the Tuscarora Mountains. As shown in Figure 3.7-2, the predicted maximum extent of the 10-foot drawdown contour extends beneath portions of the Lower Northern Native Pasture, which is included in the Maggie Creek Watershed Restoration Program (MCWRP) area. As explained on page 3-102 of the Draft SEIS, surface waters in the area where the maximum 10-foot drawdown contour extends beyond the eastern slope of the Tuscarora Mountains occur as isolated or perched systems that are not believed to be hydraulically connected to the deeper regional ground water system. Therefore, impacts to perennial streams and springs in LCT restoration areas from Barrick's dewatering activities are not anticipated.

Letter 3 Continued

Field Manager

File No. BLM 6-4
EC 32.7

3-43 In comparing these two figures, we note that the current 10-foot drawdown contour along Maggie Creek north of the Gold Quarry Pit extends nearly to the confluence of East Cottonwood Creek with Maggie Creek. This exceeds the area of the predicted maximum 10-foot drawdown contour that is not expected until many years in the future. The current area of impact also exceeds the predicted area of impact in other locations. This lessens our confidence in the model used and suggests that future drawdowns may occur in a far wider area than currently predicted. This could potentially increase the area of impact to LCT and other important resources such as riparian vegetation and wildlife.

3-44 Section 5.2.2. Humboldt River. Page 5-17. We concur with and support the need to mitigate for potential future reductions in Humboldt River flows during low flow periods.

3-45 Section 5.3.1.2. Rock Creek Watershed. Page 5-20. The acreage of riparian vegetation reported here (i.e., 1,685) is not in agreement with that reported on page 5-19 (i.e., 1,705).

3-46 Section 5.4.2. Humboldt River. Page 5-24. The last sentence of this section reinforces the need for continued monitoring along the river (supported by the statement regarding possible increased metal concentrations in sediments near out falls) and at the Humboldt Sink, similar to that which has been conducted by the Service. Both Barrick and Newmont should contribute to periodic monitoring efforts in these areas.

3-47 Section 5.5.1. Mine Dewatering and Localized Water Management Activities. Page 5-24. The uncertainty of model-predicted surface water reductions reinforces the need for long-term (i.e., >100 years) monitoring as well as mitigation of impacts, if needed. Contingency funds for these activities should be made available prior to closure of the mines.

We appreciate the opportunity to comment on this draft document. If you have any questions or need clarification on our comments, please contact Stanley Wiemeyer at (775) 861-6300 in relation to environmental contaminants issues, and Marcy Haworth at (775) 861-6300 or Laura Berglund at (775) 623-1526 in relation to threatened and endangered species issues.

for Robert D. Williams

cc:
Administrator, Nevada Division of Wildlife, Reno, Nevada

Responses to Letter 3

3-43 The comment references Figures 3.7-1 and 3.7-2 and the extent of the current drawdown versus the projected maximum drawdown. The comment is unclear as the figures referenced (3.7.1 and 3.7.2) illustrate the maximum extent of the projected drawdown cone and do not indicate the location of the current 10-foot drawdown contour.

The confluence of Cottonwood Creek and Maggie Creek is near the boundary of the Hadley Allotment and the T-Lazy S Allotment, which lies well to the east of the maximum 10-foot drawdown contour. No revision was made.

3-44 It is important to reiterate the discussion on page 5-17 stating that the cone of depression resulting from the Goldstrike Mine dewatering is not predicted to extend to (or result in reductions in flow to) the Humboldt River. Therefore, the Goldstrike Mine is not predicted to contribute to potential reductions in river baseflow.

3-45 The riparian vegetation acreage of 1,685 acres provided in Section 5.3.1.2 (page 5-20), Rock Creek Watershed, has been revised to 1,705 acres.

3-46 Barrick currently does not anticipate that future Humboldt River discharges of excess mine water will be necessary. However, any discharge would necessarily meet the conditions, effluent limitations, and outfall monitoring requirements set forth in the existing NPDES permit. In addition, as presented in the Mitigation Plan (Appendix A of the Final SEIS), if Barrick discharges in the future, it would contribute funds to the USFWS (during the discharge period) for additional water quality and biological monitoring along the Humboldt River and at the Sink. As indicated in the response to comment 1-9, Barrick will make a $25,000 contribution to Humboldt River monitoring during each year that it discharges water to the Humboldt River.

3-47 As stated in the responses to comments 3-5 and 3-21, monitoring and mitigation contingency funds are already in place to address potential long-term impacts.

Letter 3 Continued

Field Manager

File No. BLM 6-4
EC 32.7

Administrator, Nevada Division of Environmental Protection, Carson City, Nevada
State Director, Bureau of Land Management, Reno, Nevada
Chief, U.S. Army Corp of Engineers, Reno, Nevada
Chief, Office of Federal Activities, Environmental Protection Agency (CMD-2), San Francisco, California (Attn: Jeanne Geselbracht)
Assistant Regional Director, Ecological Services, Fish and Wildlife Service, Portland, Oregon (Attn: Don Steffeck)
Operations Manager, CA/NV Operations Office, Fish and Wildlife Service, Sacramento, California

Letter 4

KENNY C. GUINN
Governor

STATE OF NEVADA

JOHN P. COMEAUX
Director

DEPARTMENT OF ADMINISTRATION
209 E. Musser Street, Room 200
Carson City, Nevada 89701-4298
Fax (775) 684-0260
(775) 684-0209

November 13, 2000

Bureau of Land Management
Elko Field Office
Attn: Kirk Laird, SEIS Coordinator
3900 E. Idaho St.
Elko NV 89801

Re: SAI NV # E2001-032

Project: DSEIS for Barrick Goldstrike Mines, Inc., Betze Project

Dear Mr. Laird:

Enclosed are the comments from the Nevada Divisions of Water Resources, Minerals and Wildlife, and the Bureaus of Mines and Health Protection Services and the Office of Historic Preservation concerning the above referenced report. These comments constitute the State Clearinghouse review of this proposal as per Executive Order 12372. Please address these comments or concerns in your final decision. If you have questions, please contact me at 684-0209.

Sincerely,

Heather K. Elliott

Heather K. Elliott
Nevada State Clearinghouse/SPOC

Letter 4 Continued

NEVADA STATE CLEARINGHOUSE
Department of Administration
Budget and Planning Division
209 East Musser Street., Room 200
Carson City, Nevada 89701-4298
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fax (775) 684-0260

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Nevada SAI # **E2001-032**
Project: **DSEIS for Barrick Goldstrike Mines, Inc Betze Project**

___Yes ___No Send more information on this project as it becomes available.

CLEARINGHOUSE NOTES:
Enclosed, for your review and comment, is a copy of the above mentioned project. Please evaluate it with respect to its effect on your plans and programs; the importance of its contribution to state and/or local areawide goals and objectives; and its accord with any applicable laws, orders or regulations with which you are familiar.

Please submit your comments no later than **November 10, 2000**. Use the space below for short comments. If significant comments are provided, please use gency letterhead and include the Nevada SAI number and comment due date for our reference. Questions? Heather Elliott, 684-0209.

THIS SECTION TO BE COMPLETED BY REVIEW AGENCY:

___No comment on this project
___Proposal supported as written
___Additional information below

___Conference desired (See below)
___Conditional support (See below)
___Disapproval (Explain below)

AGENCY COMMENTS:

4-1 The proposed pipeline is the only proposed action analyzed in the DSEIS. The Nevada Division of Water Resources supports the construction of the proposed pipeline as delineated in the DSEIS.

Tim Wilson
Signature s:\sbardat\clear\clear.doc
Tim Wilson

Agency
Staff Engineer II, Division of Water Resources

Date
10/12/00

Responses to Letter 4

4-1 Comment noted.

Letter 4 Continued

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DATE: September 25 , 2000

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Nevada SAI # **E2001-032**
Project: **DSEIS for Barrick Goldstrike Mines, Inc Betze Project**

___Yes ___No ___Send more information on this project as it becomes available

CLEARINGHOUSE NOTES:
Enclosed, for your review and comment, is a copy of the above mentioned project. Please evaluate it with respect to its effect on your plans and programs; the importance of its contribution to state and/or local areawide goals and objectives; and its accord with any applicable laws, orders or regulations with which you are familiar.

Please submit your comments no later than **November 10, 2000**. Use the space below for short comments. If significant comments are provided, please use gency letterhead and include the Nevada SAI number and comment due date for our reference. Questions? Heather Elliott, 684-0209.

THIS SECTION TO BE COMPLETED BY REVIEW AGENCY:

4-2
___No comment on this project
_x_Proposal supported as written
___Additional information below

___Conference desired (See below)
___Conditional support (See below)
___Disapproval (Explain below)

AGENCY COMMENTS:

Doug Driesner
Signature
s:\shardat\clear\clear.doc

MINERALS
Agency

11-8-00
Date

Responses to Letter 4

4-2 Comment noted.

Letter 4 Continued

STATE OF NEVADA
DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES
DIVISION OF WILDLIFE
1100 Valley Road
P.O. Box 10678
Reno, Nevada 89520-0022
(775) 688-1500 • Fax (775) 688-1595

KENNY C. GUINN
Governor

PETER G. MORROS
Director
Department of Conservation and Natural Resources

TERRY R. CRAWFORTH
Administrator

October 30, 2000

Heather Elliott
Nevada State Clearinghouse
Department of Administration
Budget and Planning Division
209 East Musser Street, Room 200
Carson City, NV 89701-4298

RE: SAI# E2000-032, Draft Supplemental Environmental Impact Statement, Betze Project, Barrick Goldstrike Mines Inc. - BLM

Dear Ms Elliott:

4-3 We appreciate the opportunity to provide comments on the subject document. On pages 3-157, 3-187, 3-195 and 3-216, the document indicates Barrick would coordinate and implement specific changes on the land use of the Squaw Creek allotment to provide mitigation opportunities for several resources being impacted by Barrick's operations. Wildlife and fisheries populations and habitat are two of the resources being directly impacted by dewatering operations in Boulder Valley. Land use changes mitigating wildlife and fisheries values should include Division input. The Division would appreciate the opportunity to participate in the development of these land use changes.

4-4 On page 3-158, the document indicates the BLM is implementing reclamation and reseeding programs to improve range conditions and to minimize cheatgrass invasions. The Division is also actively cooperating with the BLM, private landowners, industry and wildlife groups to accomplish the same goals. Much of the work being accomplished is in the vicinity of this project.

4-5 On page 5-20, under the heading 5.3.1.1, Maggie Creek Watershed, the last sentence in the last paragraph indicates that water augmentation projects have been proposed as a consequence of the Maggie Creek Watershed Restoration Project. This proposal would compensate for the potential loss or reduction of ground water in the area. Has some project been implemented in the Maggie Creek watershed that will mitigate future reductions in stream flow caused by lowering the water table? If so that what are these projects and who has proposed them? This information should be included in this discussion.

Responses to Letter 4

4-3 Comment noted. The BLM has and will continue to involve the Nevada Division of Wildlife (NDOW) in monitoring and mitigation discussions regarding wildlife and fisheries resources.

4-4 Comment noted.

4-5 Text regarding proposed water augmentation projects for the Maggie Creek watershed has been added to Section 5.3.1.1 (page 5-20), Maggie Creek Watershed, as a result of the comment.

Letter 4 Continued

Heather Elliott
October 30, 2000
Page 2

If there are any questions or comments regarding this input, please contact me.

Sincerely,

Rory E Lamp

Rory E. Lamp
Biologist III
1375 Mountain City Highway
Elko, NV 89801
(775) 738-5332

RL/rl
cc: Habitat Bureau
Region II
File

Letter 4 Continued

Review of

Draft Supplemental Environmental Impact Statement, Betze Project
September 2000, Barrick Goldstrike Mines Inc.

by the U.S. Bureau of Land Management, Elko Field Office

Nevada SAI#: E2001-032
Due: November 10,2000

Reviewed by: Lisa Shevenell, Nevada Bureau of Mines and Geology (November 9, 2000)

Portions of this document related to water resources and modeling were reviewed. Comments, many relatively minor, related to this document are included below.

4-6 Page iii: "Several" springs are noted to have dried up or had reductions in flows. The number of each should be specified.

4-7 Page iv: A statement indicates that base flow impacts to the Humboldt River are not anticipated. See comment for page 3-121 below, where the document indicates that the impacts will not be "significant."

4-8 Page 1-22: In order to clarify the past and future water management practices, a table should be added showing annual amounts of water pumped, consumed in operations, discharged via irrigation, infiltration, injection, and to the Humboldt River. Annual projected values should also be included in the table. The amount of current capacity, or permitted amounts, for each of the categories should be included. Also on this page, it should be stated at what depth, and in what lithology the re-injection has been and will be occurring.

4-9 Page 2-1: There is a statement that on 5/2/97, Barriek and ELLCO requested an expansion of a right of way to install a second pipeline. This supplemental EIS document is a bit ambiguous as to its overall purpose (e.g., evaluate on-going water management operations and installation of a buried pipeline as the proposed action (pg 1.1)). Was the document prepared largely to discuss current knowledge surrounding the water management practices, with the "Proposed Action" of an additional pipeline put in as a small add-on to the document? These two activities, while related, are of totally different magnitudes. If the supplemental EIS document was prepared mainly to justify the construction of the additional ≈4000 feet of pipeline adjacent to a current pipeline (with a delay time of over three years from the time of the action request), the document content and size, and delay time, seem excessive for such a relatively minor activity. Clarification of these issues would be helpful.

4-10 Page 3-6, Fig. 3.1-3: Some of the groundwater flow arrows are dashed in the carbonates. What is the significance of this different symbol for the flow lines?

4-11 Page 3-34: Figure 3.2-7 shows numerous wells and contoured water levels. Are water levels available for all wells depicted? If not, the ones with pre-mining water level data should be

Responses to Letter 4

4-6 This section is intended to be a brief summary of impacts. A discussion of specific spring flow reductions and possible mine impacts would require a duplication of the text provided on page 3-9 of the Draft SEIS. Details regarding the spring flow reductions observed to date are presented in Table 3.2-22.

4-7 The text on page 3-121 has been revised to delete the word "substantial."

4-8 Pertinent information regarding Barrick's water management activities (including pumping periods and rates, drawdown, pumped volume, reinfiltration volume, and Humboldt River discharge periods, rates, and volumes) are provided in the Draft SEIS in Table 1-4 (pages 1-29 and 1-30) and Table 1-5 (page 1-31). Additional details regarding pumping, infiltration, and discharge are provided in the reports submitted as part of the BVMP (Barrick Goldstrike Mines, Inc. 1999a), which were incorporated by reference into the Draft SEIS (in accordance with 40 Code of Federal Regulations [CFR] 1502.21).

4-9 A more detailed discussion of the background and purpose for the SEIS is provided in the Summary section of the Draft SEIS. In essence, Barrick's water management operations and ground water monitoring have provided new information regarding the pumping requirements and potential environmental impacts of Barrick's ground water pumping operations at the Goldstrike Mine. Thus, this SEIS was prepared both to address these potential impacts as well as the impacts of the proposed buried water pipeline. See also the response to comment 1-1 regarding the water pipeline.

4-10 As stated in the text, the information provided on the regional geologic cross-section is from Maurer et al. (1996). In response to the comment, an explanation has been added to Figure 3.1-3, which indicates that the ground water flow lines are dashed where the direction of flow is uncertain.

4-11 As explained in the text (Draft SEIS, page 3-30), the unconfined water levels are from Maurer et al. (1996) and represent water levels recorded only in wells monitored by the USGS prior to active dewatering. The information provided in Maurer et al. indicates all of the points (well locations) represent monitoring wells used to construct the contour map. The statement regarding "only limited data exist to define the ground water elevation (or potentiometric surface) throughout the region" refers to distribution of premine well data. For example, premine monitoring wells did not exist over much of the Sheep Creek Range, Antelope Creek drainage, and Tuscarora Mountain areas.

Letter 4 Continued

4-11 highlighted with a different symbol, because statements on 3-33 indicate there were limited data for constructing the pre-mining piezometric surface.

4-12 Page 3-114: Table 3.2-25 shows predicted water chemistry in the pit lakes. In all cases, the models apparently predict As concentrations <0.001 mg/L. However, data reported for groundwaters in the various hydrostratigraphic units on Table 3.2-7 show higher As concentrations for all units (minimum listed value is 0.002 mg/L), with values in groundwater of up to 0.41 mg/L. Much greater explanation of these low predicted As concentrations is required. Which groundwater chemistry was used as inflow to the pits in the model, and why is As decreasing in the pit lakes relative to concentrations in surrounding groundwaters (e.g., adsorption of As to Fe oxy-hydroxides and settling out of the water column?)? How does evapoconcentration affect As concentrations?

4-13 3-121: On this page it is stated that there will not be "substantial" impacts to the base flow to the Humboldt River due to dewatering. This needs to be quantified. Based on all of the various water management practices, it seems likely that some impacts to the base flow would result. Because the river is over-appropriated, any loss to base flow might be important. The document states that the loss from the pit lake from evaporation after the pit is full will be about 2700 acre-ft per year. What percentage is this loss (and other anticipated losses) relative to the modeled pre-mining base flow to the Humboldt River from the Boulder Flat basin?

Responses to Letter 4

4-12 The text and tables in the Draft SEIS are intended to summarize the complete results and conclusions of the pit lake study (Radian International, LLC and Baker Consultants, Inc. 1997a). The technical document (Radian International, LLC and Baker Consultants, Inc. 1997a) was incorporated into the Draft SEIS by reference and was made available for review by the public at the BLM Elko Field Office. A detailed explanation of ground water inflow water types used as input to the model is described in the referenced pit lake report. Chemical controls on arsenic and other trace metals also are described in this report. Over the 233-year model period, arsenic and other trace metal concentrations are predicted to be controlled by sorption onto amorphous ferric hydroxide, which is predicted to precipitate out of the water column. During this time frame, evapoconcentration is not predicted to affect arsenic concentrations. For additional details, please refer to the referenced report.

4-13 See the responses to comments 2-21, 3-34, and 4-7.

11- 1-00;11:52AM;DWSRF ;775 687 3218 # 1/ 7

Fax to
Heather
@ 684-0260

JON

NEVADA STATE CLEARINGHOUSE

Department of Administration
Budget and Planning Division
209 East Musser Street, Room 200
Carson City, Nevada 89701-4298
(775) 684-0209
fax (775) 684-0260

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Nevada SAI # E2001-032
Project: DSEIS for Barrick Goldstrike Mines, Inc Betze Project

[redacted]

CLEARINGHOUSE NOTES:
Enclosed, for your review and comment, is a copy of the above mentioned project. Please evaluate it with respect to its effect on your plans and programs; the importance of its contribution to state and/or local areawide goals and objectives; and its accord with any applicable laws, orders or regulations with which you are familiar.

Please submit your comments no later than **November 10, 2000**. Use the space below for short comments. If significant comments are provided, please use gency letterhead and include the Nevada SAI number and comment due date for our reference. Questions? Heather Elliott, 684-0209.

THIS SECTION TO BE COMPLETED BY REVIEW AGENCY:

___No comment on this project
✓ Proposal supported as written
___Additional information below
___Conference desired (See below)
___Conditional support (See below)
___Disapproval (Explain below)

AGENCY COMMENTS:

4-14 ANY EXPANSION OF/OR CONSTRUCTION OF PUBLIC WATER SYSTEMS MUST BE IN ACCORDANCE WITH APPLICABLE NEVADA REVISED STATUTES AND NEVADA ADMINISTRATIVE CODE.

Signature s:\sbardar\clear\clear.doc
BHPS Agency
11-1-00 Date

4-14 Comment noted.

Letter 4 Continued

NEVADA STATE CLEARINGHOUSE

Department of Administration
Budget and Planning Division
209 East Musser Street., Room 200
Carson City, Nevada 89701-4298
(775) 684-0209
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DATE: September 25 , 2000

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Nevada SAI # **E2001-032**
Project: **DSEIS for Barrick Goldstrike Mines, Inc Betze Project**

___Yes ___No Send more information on this project as it becomes available.

CLEARINGHOUSE NOTES:
Enclosed, for your review and comment, is a copy of the above mentioned project. Please evaluate it with respect to its effect on your plans and programs; the importance of its contribution to state and/or local areawide goals and objectives; and its accord with any applicable laws, orders or regulations with which you are familiar.

Please submit your comments no later than **November 10, 2000**. Use the space below for short comments. If significant comments are provided, please use gency letterhead and include the Nevada SAI number and comment due date for our reference. Questions? Heather Elliott, 684 0209.

THIS SECTION TO BE COMPLETED BY REVIEW AGENCY:

4-15
___No comment on this project
[✓ Proposal supported as written]
___Additional information below
___Conference desired (See below)
___Conditional support (See below)
___Disapproval (Explain below)

AGENCY COMMENTS:

Rebecca L Palmer
Signature

s:\shardat\clear\clear.doc

Historic Preservation
Agency

11/6/00
Date

Responses to Letter 4

4-15 Comment noted.

Letter 5

NOV-14-2000 TUE 03:34 PM FAX NO. P. 01

STATE OF IDAHO
DEPARTMENT OF
ENVIRONMENTAL QUALITY

1410 North Hilton • Boise, Idaho 83706-1255 • (208) 373-0502

Dirk Kempthorne, Governo
C. Stephen Allred, Directo

2000 NOV 14 PM 2: 20

November 14, 2000

Kirk Laird
Elko Field Office
Bureau of Land Management
3900 Idaho Street
Elko, NV 89801

Dear Mr. Laird:

5-1

This letter is in response to the Federal Register (Vol. 65, No. 180; September 15, 2000) Notice of Availability of the Betze-Post Project Draft Environmental Impact Statement (EIS) in Eureka County, Nevada. The following comments address air quality issues related to the use of prescribed fire. Prescribed fire needs to be conducted consistent with the Federal Clean Air Act, and any associated federal, state, and local policies and regulations.

The DEIS does not indicate how the vegetation removed during pipeline construction will be disposed. If prescribed fire will be used as the method of disposal, the DEIS should include a discussion of the smoke management program that will be followed. An air quality analysis should at least include: an estimate of maximum number of acres to be burned in a day, acres per burn unit, maximum duration of burns, and maximum daily and burn unit PM_{10} and $PM_{2.5}$ emissions; smoke sensitive areas; predominant meteorological patterns; smoke monitoring procedures; emission and smoke impact reduction techniques; public notification process; mitigation actions during smoke intrusion episodes; alternatives to burning considered and used; and coordination with other burn activity. The enclosure provides related information.

We support a coordinated effort between state, interstate, federal, tribal, and local agencies. All prescribed fire activities must include careful consideration of air quality impacts and requirements. Thank you for the opportunity to comment and if you have any questions, please contact me by phone at (208)373-0214, by e-mail at driley@deq.state.id.us, or at the Department of Environmental Quality.

Sincerely,

Diane Riley

Diane Riley
Air Quality Analyst
Air Quality Management Unit

DR/bwm c:\data\word\laird.doc

Enclosure

cc: COF
Prescribed Fire Correspondence File

Responses to Letter 5

5-1 See the response to comment 1-1 regarding Barrick's withdrawal of its right-of-way application for a buried water pipeline.

Letter 5 Continued

Comment Letter Enclosure

Idaho Department of Environmental Quality

The Idaho Department of Environmental Quality (DEQ), State Air Quality Program Office specifically, has the primary responsibility to carry out the requirements of the Federal Clean Air Act (CAA) in Idaho. DEQ has a state office in Boise and six regional offices (Boise, Coeur d' Alene, Idaho Falls, Lewiston, Pocatello and Twin Falls). The state office staff oversee air quality compliance and enforcement, and support ambient air quality monitoring and planning activities. The regional office air quality staff issue air quality permits, operate the monitoring sites, conduct source inspections, work with the local communities, handle complaints, and prepare and implement plans.

DEQ is concerned about smoke emissions for several reasons. The state of Idaho is 64 percent federal lands and is surrounded by states where wildland and prescribed fires can be a major source of emissions. The Federal Wildland Fire Management Policy and Program Review Implementation Action Plan Report (May 1996) calls for an expanded program to reintroduce fire in fire-dependent ecosystems. This may mean a ten fold or more increase in the use of wildland and prescribed fire. EPA regulations and policies have increased the need for managing fire emissions. The following paragraphs discuss the most relevant regulatory issues for wildland and prescribed fire.

National Ambient Air Quality Standards

The National Ambient Air Quality Standards (NAAQS) are established by EPA to protect human health and welfare. There are NAAQS for the following six air pollutants: carbon monoxide, ozone, nitrogen dioxide, sulfur dioxide, lead, and particulate matter. An area that violates any of the NAAQS is designated nonattainment for the specific NAAQS. Of the six, particulate matter (PM) is the pollutant of most concern for smoke emissions. There are four forms of the PM NAAQS. Prior to July 1997, there were only two, the annual and 24-hour PM_{10} NAAQS. PM_{10} stands for PM less than 10 micrometers in aerodynamic diameter which is equivalent to 1/25,000th of an inch. Last July 1997, EPA promulgated new PM NAAQS. In addition, there is now an annual and 24-hour $PM_{2.5}$ NAAQS. $PM_{2.5}$ stands for PM less than 2.5 micrometers in aerodynamic diameter which is 1/4 the size of PM_{10}. Attainment/nonattainment designations for the new $PM_{2.5}$ NAAQS will begin in the year 2002.

Once an area has been designated nonattainment, DEQ must prepare an attainment plan to meet the NAAQS by EPA specified deadlines. A nonattainment area plan can take several years to complete and generally includes: background information, air quality and meteorological assessments, emissions inventories, control measures, modeled attainment demonstrations, and contingency measures for the specific nonattainment area. Idaho state currently has three nonattainment areas for PM_{10}: Portneuf Valley (Pocatello area); Pinehurst; and Sandpoint. A portion of Kootenai County (Coeur d'Alene area) is a proposed PM_{10} nonattainment area. Fort Hall Indian Reservation is a tribal/EPA nonattainment area for PM_{10}. The NAAQS violations are the result of exceedences of the 24-hour PM_{10} NAAQS in the winter as well as an exceedence of the annual PM_{10} NAAQS in Portneuf Valley.

There is also a statewide State Implementation Plan (SIP). The statewide SIP includes information on DEQ's general authority to regulate air quality, stationary source permitting, compliance, enforcement,

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and monitoring programs, nonattainment area plans, rules, statewide emissions inventory, and air stagnation advisories.

Health Effects

$PM_{2.5}$ can lodge deeply in the lungs and are more likely to cause health effects than PM_{10}. The majority of PM from smoke emissions is composed of organic and elemental carbon, and inorganic ash in the $PM_{2.5}$ size class. Toxic gases such as polynuclear aromatic hydrocarbons (PAH) can condense and absorb into particles. DEQ believes that the new $PM_{2.5}$ NAAQS will be more difficult to meet compared to the PM_{10} NAAQS, particularly for wildland and prescribed fire.

Monitoring

DEQ operates an extensive ambient air monitoring network to monitor for the NAAQS. Sites are located in Idaho's major urban areas as well as a few remote areas. The data from DEQ's network is available to the public.

General Conformity

The 1977 CAA amendments made it very clear that the Federal Government is subject to the CAA requirements. Section 118(a) states that any air polluting activity under the jurisdiction of the Federal Government "shall be subject to, and comply with, all Federal, State, interstate, and local requirements, administrative authority, and process and sanctions respecting the control and abatement of air pollution in the same manner, and to the same extent as any nongovernmental entity."

The 1990 CAA amendments added that the above shall apply to any requirement whether substantive or procedural, any fees or charges imposed by state and local agencies to defray program costs, and any federal, state, or local exercise of authority, process, or sanctions. The 1990 amendments also required EPA to establish the transportation and general conformity regulations. The general conformity rule, promulgated in November 30, 1993, applies to non-transportation related federal activities such as prescribed fire. A conformity determination must be made for projects emitting air pollutants over specified de minimis levels to show that the projects will not contribute to any NAAQS violations. If a project is found to contribute to NAAQS violations, then emissions must be reduced or offset (another source's emissions are reduced).

Visibility

The 1977 CAA amendments, section 169A, established the following national visibility goal: "Congress hereby declares as a national goal the prevention of any future, and the remedying of any existing, impairment of visibility in mandatory Class I Federal areas which impairment results from manmade air pollution." One hundred and fifty six Class I areas were established in 1977 and included all national parks greater than 6,000 acres, all wilderness areas greater than 5,000 acres, and a few other areas. Class I areas are subject to the most stringent restrictions on how much additional pollution (increment) can be allowed. States containing Class I areas are to develop state visibility plans including long term strategies and monitoring programs to meet this national goal. Only seven states have approved visibility plans. All other states, including Idaho, are under federal

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implementation plans. Idaho has all or portions of five Class I areas: Selway-Bitterroot; Hell's Canyon; Sawtooth; Craters of the Moon; and Yellowstone.

In the mid-1980's, the IMPROVE (Interagency Monitoring of Protected Visual Environments) network began operation. These sites monitor visibility through optical, particle, and visual measurements. This data is also available to the public. The data are used to establish background visibility levels, identify chemical species and emission sources, and document long-term visibility trends for assessing progress toward the national visibility goal.

The 1990 CAA amendments established the Grand Canyon Visibility Transport Commission (GCVTC) which issued a report to Congress with recommendations in 1996 on how to address visibility for 16 Class I areas in the Colorado Plateau. Southwestern Idaho was identified as a clean air corridor for these Class I areas. The Western Regional Air Partnership includes federal, state, tribal, private, and public representatives from ten western states. It was formed to implement the recommendations from the GCVTC report. The recommendations were used by EPA to develop the new regional haze regulations which were published on July 1, 1999. The regulations require all states to develop visibility plans to address regional haze impairment to Class I areas within their state and to Class I areas outside their state which may be affected by emissions from within their state.

Prevention of Significant Deterioration (PSD)

Part C, Subpart 2, of the Clean Air Act establishes maximum allowable increases (or increment) over baseline for PM_{10}, SO_2, and NOx for Class I and Class II areas. Baseline concentrations are established when the first major emitting facility (as defined by the Clean Air Act) is granted a PSD permit in the airshed. An increment consumption analysis would be conducted when the second major emitting facility applies for a permit to construct. The analysis would take into account the proposed facility's emissions as well as all other new emissions since the baseline was established, including prescribed fire emissions. If the analysis shows the increment has been consumed, then the facility can either provide offsets (install control equipment on other sources, etc.), reduce the emissions for the proposed facility, or not build the proposed facility. In general, this provision is not applicable to wildland and prescribed fires because fires are considered temporary activities and not stationary sources.

Smoke Management

Idaho Code includes two advisory programs related to smoke management. 1) The air quality advisory program is primarily to address woodstove and fireplace emissions during the winter. There are air quality advisory programs in Coeur d'Alene, Pinehurst, Sandpoint, Ada County, and Pocatello. 2) An air stagnation advisory issued by DEQ bans all open burning and can apply to any area in the state experiencing critical air quality levels (IDAPA 58.01.01.550-562). An air stagnation advisory is issued when a NAAQS violation is possible or occurring. There are also restrictions for burning of some materials such as trade waste, residential solid waste, garbage, tires, and plastics (IDAPA 58.01.01.600-616). Idaho prefers to have voluntary rather than mandatory smoke management programs. A Memorandum of Understanding (MOU) between DEQ and the U.S. Forest Service (USFS) Regions 1, 4, and 6 has been in effect since 1988. The MOU is an agreement for the agencies to share information with each other.

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Idaho and Montana have a joint smoke management program for forest and range prescribed burning. The purpose of the program is to minimize smoke impacts from prescribed fires. The program is voluntary in Idaho. Burners submit planned burn lists at the beginning of the calendar year and individual burns are reported the day prior to ignition. A full-time meteorologist uses burn activity, weather, and air quality information to make burn go/no go recommendations. Burn restrictions are usually issued by "airshed" and elevation. Idaho is divided into 16 airsheds. An airshed is a geographic area with similar topography and meteorology in which the air flow is contained the majority of the time (similar to a watershed).

EPA released its "Interim Air Quality Policy on Wildland and Prescribed Fires" (Interim Policy) in May, 1998. The objective of the Interim Policy is to provide for fire to function naturally in the wildlands while protecting public health and welfare. The Interim Policy provides great incentive for states and federal land managers to work together to develop state smoke management programs. The programs, certified to EPA, can be voluntary or mandatory at the state's choice, and will not be a required component of a SIP. If a NAAQS violation occurs due to wildland or prescribed fire emissions and there is a certified state smoke management program, EPA will have the discretion to not designate an area nonattainment or, if the area is already a nonattainment area, to not require a mandatory smoke management program. In addition, if fire emissions are managed within a state smoke management program, then general conformity requirements are met.

The Interim Policy establishes the basic components of a state smoke management program: burn authorization; emission reductions; non-burning alternatives; public education and awareness; and surveillance and enforcement. In addition, the policy requires burn plans include: emission reduction actions; smoke dispersion evaluation; public notification; public exposure reduction; and air quality monitoring.

Wildfires are covered under EPA's Natural Events Policy (NEP) (May, 1996), which addresses PM_{10} NAAQS violations from wildfires. The NEP does not cover wildand fires or prescribed fires that, upon escape, are converted to wildfires. Those are covered under the Interim Policy described above. Under the NEP, a state may develop a Natural Events Action Plan (NEAP) in order to exclude PM_{10} air quality data that are attributable to the uncontrollable event of a wildfire. The NEAP must contain programs for: public notification and education; minimize public exposure to high PM_{10} from future events; minimize fire hazards and abate other burning activities during wildfire events; identify and study mitigation measures; and periodic evaluation.

Additional Sources of Information

The USFS has prepared the following documents: "A Screening Procedure to Evaluate Air Pollution Effects in Region 1 Wilderness Areas, 1991"; "Guidelines for Evaluating Air Pollution Impacts" (1992); "National Strategic Plan for Air Resources Management" (1994); "A Desk Reference for NEPA Air Quality Analysis" (1995); "Air Quality Conformity Handbook" (1995); "When and How to Monitor Prescribed Fire Smoke: A Screening Procedure" (1997); "Describing Air Resource Impacts from Prescribed Fire Projects in NEPA Documents" (2000); and "An Introduction to Smoke Emissions and Dispersion Modeling" (ongoing USFS training course). The Interior Columbia Basin Ecosystem

Letter 5 Continued

The U.S. EPA has prepared the following documents: "Prescribed Burning Background Document and Technical Information Document for Prescribed Burning Best Available Control Measures" (U.S. EPA, 1992); "Interim Air Quality Policy for Wildland and Prescribed Fire" (1998); and "Regional Haze Regulations" (64FR35713, 7/1/99).

There are several web sites for further information:
ftp://alta_vista.cira.colostate.edu (download IMPROVE data)
http://www.4cleanair.org (STAPPA/ALAPCO)
http://www.aos.wisc.edu (weather forecasts)
http://www.aqd.nps.gov/natnet/ard/impr/index.htm (IMPROVE newsletter)
http://www.atmos.washington.edu/mm5rt/00latest/latest.html (ventilation index)
http://www.boi.noaa.gov (fire weather forecasts)
http://www.dri.edu/Programs/CEFA (Program for Climate, Ecosystem and Fire Applications)
http://www.epa.gov/airlinks (most recent EPA air activities)
http://www.epa.gov/airnow/statedata.html (state real-time air quality data)
http://www.epa.gov/airs/nonattn.html (nonattainment areas)
http://www.epa.gov/airsweb (EPA AIRS database)
http://www.epa.gov/oar/vis/index.html (EPA visibility site and regional haze rule)
http://www.epa.gov/ttn/oarpg/t1pgm.html (interim policy on wildland and prescribed fire and natural events policy)
http://www.epa.gov/oar/oaq_caa.html (Clean Air Act)
http://www.epa.gov/r10earth (EPA Region 10)
http://www.epa.gov/ttn/chief/ap42.html#chapter (emission factors)
http://www.epa.gov/ttn/oarpg/naaqsfin/ (new ozone and particulate matter standards)
http://www.fire.org (USFS fire management tools)
http://www.fs.fed.us/r6/aq (USFS national air resources program)
http://www.fs.fed.us/r1/fire/nrcc/Smoke_web_pages/intro.htm (ID/MT smoke management program web site #2)
http://www.fs.fed.us/rl/gallatin/air/guidance.shtml (USFS Northern Region air resources program)
http://www.icbemp.gov (ICBEMP reports)
http://www.nifc.doi.gov/joint_fire_sci/index.html (Joint Fire Science Program)
http://www.nifc.gov/fireinfo/nfn.html (national fire news)
http://www.odf.state.or.us/fireprot.htm (OR smoke management program)
http://www.osei.noaa.gov/ (satellite imagery)
http://www.smokemu.org (ID/MT smoke management program web site #1)
http://www2.state.id.us/adm/adminrules/rules/IDAPA58/58INDEX.HTM (Idaho DEQ air quality rules)
http://www.state.id.us/deq (Idaho DEQ)
http://www.state.nv.us/ndep/bao/smoke1.htm (NV smoke management program)
http://www.utahsmp.net (Utah smoke management)
http://www.wa.gov/ecology/air/airhome.html (Washington Dept. of Ecology)
http://www.wrapair.org (WRAP, successor to GCVTC)

Letter 6

Pyramid Lake Paiute Tribal Cour
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Kirk Laird, SEIS Project Manager
U.S. Department of the Interior
Bureau of Land Management
Elko Field Office
3900 E. Idaho Street
Elko, Nevada 89801

Dear Kirk Laird,

The Pyramid Lake Paiute Tribe would like to enter these comments in the record for the Draft Environmental Impact Statement Betze Project and the Cumulative Impact Analysis of Dewatering and Water Management Operations for the Betze Project, South Operations Area Project Amendment, and Leeville Project. Although this project does not directly impact the Pyramid Lake Paiute Tribe, the precedent it sets cannot be ignored.

6-1 Dewatering practices by mining companies in the Carlin Trend have impacted the Native American aboriginal homelands for years. The proposal in the supplemental EIS to increase the amount of dewatering does not address the cumulative impacts on Native American Resources. This increase must not be allowed until the impacts are measured to confirm the modeling and have an acceptable mitigation plan in place before the Record of Decision is final.

6-2 An impact to BLM designated traditional cultural property as predicted by the groundwater modeling is totally unacceptable. These lands were identified to protect them from encroachment from the mining activities. By allowing dewatering to continue at such a pace and to also increase the activity, the BLM has neglected their trust responsibility to the Western Shoshone people. This trust responsibility is very important in keeping the traditional life ways and traditional religious practices. The springs and streams are part of this culture and any degradation of water quality or quantity violates the BLM's trust responsibility for protecting the environment and cultural resources.

6-3 Dewatering has allowed groundwater resources to be relocated from one basin to another without any regard for the long-term impacts of this unnatural migration of water resources. The Betze project will contribute to this increasing problem in the Carlin Trend. The impacts from dewatering and transporting water outside the basin will be a long-term process to stabilize the water balance and the net effect of lowering the

Responses to Letter 6

6-1 Through the Native American consultation process, the BLM has worked with the Native American community to identify and analyze potential site-specific and cumulative impacts to resources of concern to Native Americans. The resource analyses are based on both ground water modeling and ground water monitoring over a period of more than 10 years. Based on the results of these analyses, the BLM and Barrick have identified measures to mitigate potential impacts to these resources.

6-2 Model simulations used for the cumulative impact analysis suggest that reductions in baseflow could occur in lower Rock Creek in the vicinity of the Rock Creek traditional cultural property (TCP). However, Barrick will implement monitoring in this area to identify baseflow reductions in advance of potential impacts to the area of concern in Rock Creek. To mitigate this potential impact, Barrick will convey a 1.5 cubic foot per second in-stream flow right to the BLM and the Nevada Division of Wildlife (see Appendix A, Mitigation Plan). Perennial springs, seeps, and streams located in the immediate vicinity of the Tosawihi Quarry TCP are considered to have a low probability of being impacted; therefore, impacts to water resources at or in the near vicinity of the Tosawihi Quarry TCP are unlikely. The text has been revised on page 5-37 of the Final SEIS.

6-3 The Goldstrike Mine is located in the Boulder Flat Hydrographic Area (HA). A portion of the dewatering water is consumed at the mine, while the remaining portion is either reinfiltrated or consumed for crop production in Boulder Flat. None of the water captured in the Goldstrike Mine dewatering system is currently transported outside of the Boulder Flat HA; the excess mine water is put back into the ground water system within the Boulder Flat HA. Instituting a reinjection system in the areas suggested in the comment would require additional ground disturbance by constructing pipelines, access roads, and well pads. As described in the SEIS, existing data indicate that the bedrock systems in these areas generally have low transmissivity and storage properties; therefore, only a small percentage of the total dewatering water could be reinjected into these areas.

Letter 6 Continued

6-3 regional water table. The EIS must look at the storage capacity of the upland soils above the pit. By allowing the water to be stored within the basin the long-term impacts to the ground water in the basin will be minimal. It must be an option to have the water remain in the natural basin from which it is extracted.

6-4 Dewatering will also have a long-term impact on the downstream recipient of the dewatering process water. This water carries salts and some heavy metals such as Arsenic to the terminus water body. By depositing Arsenic in the Carson and Humbolt sink will increase the load. The new Arsenic rule will cause a burden to individual and small communities to have drinking water comply with EPA regulations. But more important by mobilizing these metals the down gradient water users are put at risk by increasing the chance that their drinking water quality is degraded by dewatering activities in the Carlin Trend.

6-5 The Pyramid Lake Paiute Tribe respectfully requests the Draft Supplemental Environmental Impact Statement Betze Project not be approved due to the projected and inherent damage that will occur to Tribal, Traditional cultural, and public lands. The discharge water must meet drinking water standards as to minimize the loading and migration of metals in the terminus water bodies. Thank you for considering our concerns.

Sincerely,

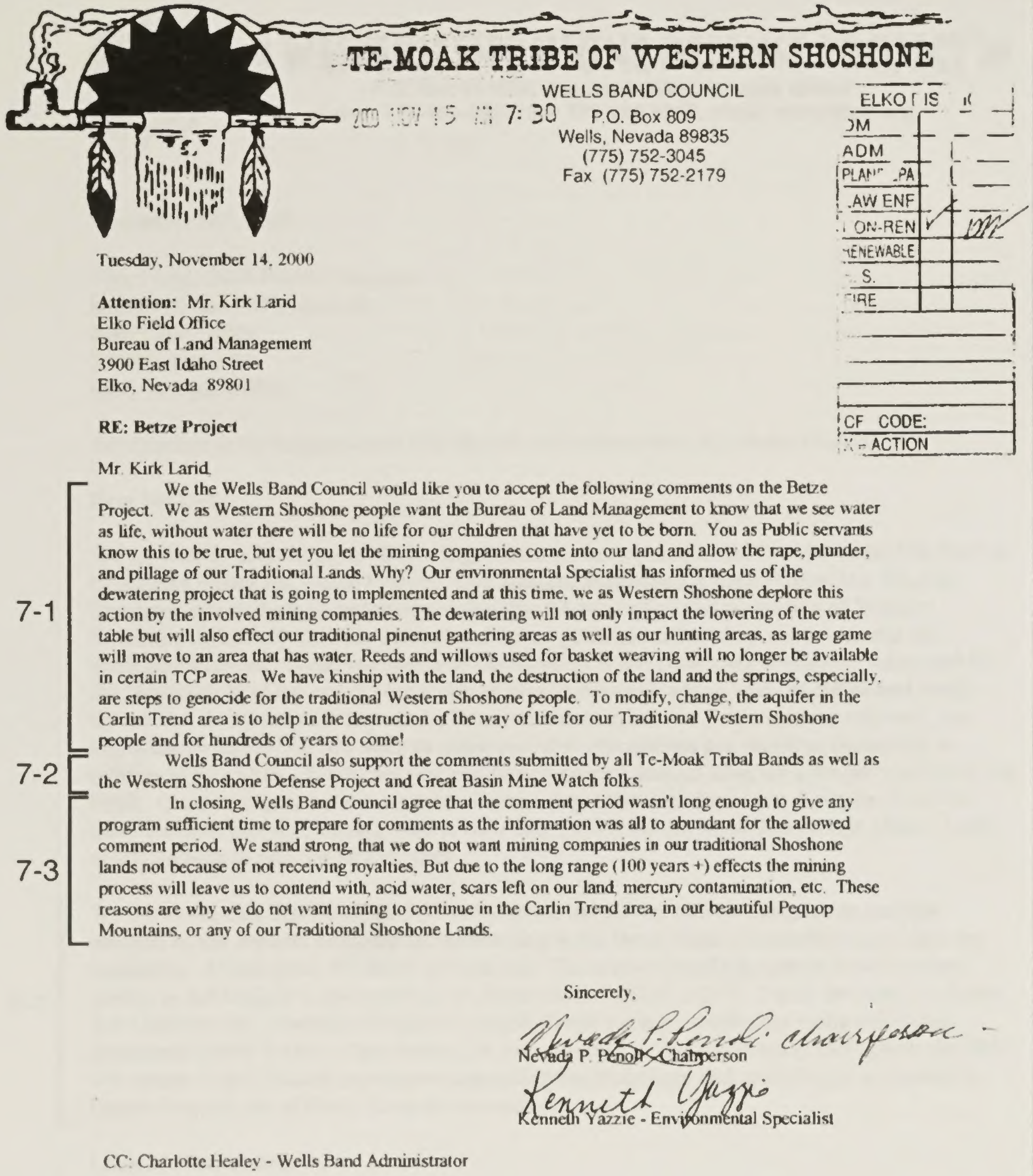
Norman Harry
Tribal Chairman
Pyramid Lake Paiute Tribe

Responses to Letter 6

6-4 As explained in the SEIS, (Section 3.2.2.2), Barrick has a NPDES permit that stipulates effluent limitations such that water quality constituent concentrations would not exceed stream water quality standards established for the protection of identified beneficial uses. Barrick's Humboldt River discharge ended in February 1999. All discharges to-date were monitored and were within their permit limitations. Although it is unlikely that Barrick will need to discharge in the future, any future discharges also would be required to meet the constituent concentration limitations stipulated in the NPDES permit. Therefore, impacts to Humboldt River water quality and potential impacts to downstream users are not anticipated. See the response to comment 3-46 regarding potential impacts to the Humboldt Sink.

6-5 As stated in the Draft SEIS, Barrick discharged excess mine dewatering water to the Humboldt River over an approximately 1.5-year period (September 1997 through February 1999). During this period, the discharge met the effluent limitations set forth in the NPDES permit. Barrick's current plans indicate that it is unlikely that the mine will discharge to the river in the future. As analyzed in the Draft SEIS, if the mine were to discharge at some point in the future, impacts to water quality in the river are not anticipated, since any discharge would be conducted in accordance with the permit's numeric effluent limitations.

Letter 7



TE-MOAK TRIBE OF WESTERN SHOSHONE
WELLS BAND COUNCIL
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Tuesday, November 14, 2000

Attention: Mr. Kirk Larid
Elko Field Office
Bureau of Land Management
3900 East Idaho Street
Elko, Nevada 89801

RE: Betze Project

Mr. Kirk Larid,

7-1 We the Wells Band Council would like you to accept the following comments on the Betze Project. We as Western Shoshone people want the Bureau of Land Management to know that we see water as life, without water there will be no life for our children that have yet to be born. You as Public servants know this to be true, but yet you let the mining companies come into our land and allow the rape, plunder, and pillage of our Traditional Lands. Why? Our environmental Specialist has informed us of the dewatering project that is going to implemented and at this time, we as Western Shoshone deplore this action by the involved mining companies. The dewatering will not only impact the lowering of the water table but will also effect our traditional pinenut gathering areas as well as our hunting areas, as large game will move to an area that has water. Reeds and willows used for basket weaving will no longer be available in certain TCP areas. We have kinship with the land, the destruction of the land and the springs, especially, are steps to genocide for the traditional Western Shoshone people. To modify, change, the aquifer in the Carlin Trend area is to help in the destruction of the way of life for our Traditional Western Shoshone people and for hundreds of years to come!

7-2 Wells Band Council also support the comments submitted by all Te-Moak Tribal Bands as well as the Western Shoshone Defense Project and Great Basin Mine Watch folks.

7-3 In closing, Wells Band Council agree that the comment period wasn't long enough to give any program sufficient time to prepare for comments as the information was all to abundant for the allowed comment period. We stand strong, that we do not want mining companies in our traditional Shoshone lands not because of not receiving royalties. But due to the long range (100 years +) effects the mining process will leave us to contend with, acid water, scars left on our land, mercury contamination, etc. These reasons are why we do not want mining to continue in the Carlin Trend area, in our beautiful Pequop Mountains, or any of our Traditional Shoshone Lands.

Sincerely,

Nevada P. Penoli Chairperson
Nevada P. Penoli - Chairperson

Kenneth Yazzie
Kenneth Yazzie - Environmental Specialist

CC: Charlotte Healey - Wells Band Administrator

Responses to Letter 7

7-1 The BLM notes the strong objections of the Wells Band to the proposed project. However, the effects identified in the letter are considered unlikely to occur. The majority of springs and spring-fed streams in the dewatering area of potential effect are not anticipated to be affected. Major changes to vegetation are not anticipated. The project is not expected to cause wildlife to concentrate in areas such as TCPs or pine-nut gathering areas more than they would naturally. The BLM recognizes the sacred nature to the Western Shoshone of the landscape, water, and general plant and animal communities that exist in northern Nevada. It also acknowledges that it cannot protect all acreage, water, and plant and animal resources from acceptable public uses. The BLM and the mining companies will work together to ensure that the Traditional Cultural Properties (TCPs), including Rock Creek, continue to have the identified natural resources necessary for continued traditional practices in the Western Shoshone over the long-term.

7-2 Comment noted. Refer to the responses to the comments in letters 8 and 9.

7-3 Comment noted.

Letter 8

WESTERN SHOSHONE DEFENSE PROJECT
P.O. Box 211308, Crescent Valley, Nevada 89821
phone: 775-468-0230, fax: 775-468-0237, email: wsdp@igc.org

2000 NOV 15 AM 7: 30

November 14th, 2000

Kirk Laird, SEIS Project Manager
Bureau of Land Management
Elko Field Office
3900 E. Idaho St.
Elko, Nevada 89801

Re: Comments on Supplemental EIS Barrick Goldstrike Mines Inc. Betze Project.

Dear Mr Laird,

We are hereby submitting the following comments in response to the Supplemental EIS Barrick Goldstrike Mines Inc. Betze Project. The Western Shoshone Defense Project is a Western Shoshone directed organization advocating for the protection and promotion of Western Shoshone rights and lands for present and future generations based upon our cultural and spiritual traditions. These comments are in addition to the comments previously submitted for the Newmont SOAPA and the Cumulative Impact Analysis which both the Betze and South Operations documents are keyed to. Thus comments submitted previously are relevant and important to this SEIS. We want to make sure that you address our previous comments in relation to this SEIS. We do not feel you have provided enough time for a proper analysis of the SEIS. Considering that you have taken 8 years to prepare this document, 8 weeks of review time, much of that overlapping with review time period for the South Operations DEIS, is not nearly enough to provide proper input.

8-1 We are concerned that the SEIS does not provide the public with an adequate or accurate analysis of the impacts of continued dewatering at the Betze Mine. Contradictions in data are confusing. At one point the claim is made that "Drawdown would not affect flows or water quality in the Maggie Creek subbasin or Rock Creek." (SEIS 3-215) Yet in the notes on Table 3.3-1 indicate the potential of impacts to Rock Creek stating "monitoring wells exhibiting drawdown (SEIS 3-145). Data in the CIA also contradicts assertions made throughout the SEIS. We concur with technical comments concerning the hydrology and modeling as presented by Doctor Tom Myers of Great Basin Minewatch.

Lack of Alternatives

8-2 The SEIS does not present reasonable alternatives to the current water management scheme. Two paragraphs dismissing additional reinjection or infiltration based on the drilling of several test holes over an 8 year period does not reflect a good faith effort to explore water management alternatives. Despite having on record the importance of the Tosawihi and Rock Creek areas to Western Shoshone, no plans have been developed that would prevent impacts to these areas.

Responses to Letter 8

8-1 The statement on page 3-215 (Draft SEIS), under the heading of California Floater, "Drawdown would not affect flows or water quality in the Maggie Creek subbasin or Rock Creek" is correct. The Water Resources and Geochemistry section of the Draft SEIS (Section 3.2) indicates that the current drawdown cone from the Goldstrike Mine extends into the Rock Creek subbasin (see Figure 3.2-22). Future drawdown is projected to expand in the Rock Creek subbasin, and eventually extend into the western margin of the Maggie Creek subbasin (see Figure 3.2-29). However, the hydrologic analysis indicates that drawdown from the Goldstrike Mine is unlikely to impact flows or water quality in Maggie Creek, and impacts to Rock Creek baseflows would likely be negligible (or not measurable). Therefore, impacts to perennial waters in the Maggie Creek subbasin and in Rock Creek are not anticipated. Footnote 5 on Table 3.3-1 was not relevant to the table, and therefore it was deleted.

8-2 The BLM has explored reasonable alternatives to Barrick's water management operations. As Barrick's pumping rate has declined to less than 31,000 gallons per minute, additional reinjection or infiltration is not considered necessary to mitigate potential impacts; the existing reinjection and infiltration capacity exceeds the pumping rate. Barrick's dewatering program is not projected to directly affect the Tosawihi Quarry TCP. The monitoring and mitigation measures proposed by the BLM and Barrick (see Appendix A, Mitigation Plan) are designed to address potential cumulative impacts to the Rock Creek TCP of concern to Native Americans.

Letter 8 Continued

Lack of Adequate Monitoring and Mitigation

8-3 Publication of the SEIS without definite monitoring and mitigation plans presents the public with an incomplete document. Mitigation can not be planned when there is no data to assess impacts from. This lack of data is reflected in both the water monitoring program as well as wildlife monitoring as represented in the sage grouse analysis. Of the 23 springs identified as monitoring points in Table 3.3-1, 5 have already dried up, and a 6th is dropping in flow. Yet nowhere can we find a discussion about what was lost at these springs and how that has been mitigated. Have new monitoring points been added to make up for ones now dry? On the same table 65 additional springs have at least a moderate chance of being impacted, yet most have not been measured since 1989. The lack of monitoring provides no baseline data, which in turn makes it difficult to impossible to determine if dewatering has affected these springs. the SEIS states that the BLM will conduct an inventory to determine the "areal extent and magnitude of impacts to flow in springs, seeps, or perennial stream reaches that may have been impacted." SEIS 3-139 Yet how will a one time inventory identify any changes if all these springs are not yearly monitored? There is no way to determine if mitigation is necessary because there is no data continuity.

8-4 Because the BLM relies upon mitigation to offset the potential impacts of dewatering, a detailed analysis of both past, present, and future mitigation is necessary. This is not provided. There is no analysis of the results of mitigations already employed. Do we see sage grouse using areas that have been seeded for their benefit? Who knows. While dewatering mpacts are predicted over 100 years into the future monitoring is only required for 30 years. What kind of assurance is that. We are not convinced that the sums deposited for mitigation by Barrick are adequate to cover the real costs. If monitoring is non-existent then there will no way to determine if there is a need for mitigation. We are left with several EIS's stating that potential significant widespread impacts may occur, but don't worry because we will figure out what to do when it happens. Considering the track record of the U.S in honoring long term promises and agreements, this is hardly an adequate assurance.

Sage Grouse

8-5 Western Shoshone representatives have expressed again and again. the importance of sage grouse to our cultural survival. At one meeting with the BLM we were told of the existence of a previously active sage grouse dancing ground in the vicinty of the Betze Mine. Subsequent monitoring indicated abandonment of the lek after mining commenced. Nowhere is this discussed. There is little data presented to assess the past and present impacts of mine operation on sage grouse in the area. thus making any predictions of future impact impossible. The SEIS reads "Because of recent wildlife events and ongoing mining operations along the Carlin Trend, it is unknown whether the majority of these sites is currently active." (SEIS 3-200) If the information is not available then the BLM has an obligation to get the required information. Considering the potential listing of the sage grouse. it is disturbing that the BLM has not seen fit to provide an adequate consideration of sage grouse.

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8-3 The Record of Decision (ROD) for the Betze EIS (BLM 1991d) included monitoring and mitigation measures to address potential impacts to springs. The ROD established several mitigation funds, including the Wetland Mitigation Fund, for onsite enhancement of replacement of riparian and wetland areas; the Long-term Monitoring Trust Fund for monitoring after year 2030; and the Long-term Environmental Monitoring and Mitigation Fund for monitoring and mitigation of unexpected impacts not predicted by the 1991 EIS. A mitigation plan developed by the BLM and Barrick to mitigate potential impacts associated with the Goldstrike Mine and potential cumulative impacts is presented in Appendix A of the Final SEIS. Under this plan, (in addition to the funds established in 1991), Barrick will improve up to 15 springs over a 3-year period following issuance of the Final SEIS.

As described in Section 3.2 of the Draft SEIS, two seep and spring inventories have been conducted for the project to define all perennial springs within (or in the vicinity of) the potential drawdown area. The initial inventory identified and characterized all seeps and springs located within a 10-mile radius of the Betze-Post Pit (JBR 1990a); a follow-up inventory extended the coverage to characterize all seeps, springs, and streams located within an approximate 600-square-mile region. Representative springs and streams within each area have been monitored annually since 1991. The existing funds and proposed mitigation measures are intended to provide for continued monitoring and mitigation of impacts to water resources during the mining and postmining periods.

8-4 As explained in the response to comment 3-5, Barrick's financial monitoring obligation will extend to the year 2030, after which the Long-Term Monitoring Fund will be used for monitoring costs. The BLM considers the long-term monitoring fund and long-term mitigation fund adequate to cover monitoring after that date.

8-5 The BLM recognizes the importance of sage grouse to Native Americans. The original Betze Project Draft EIS (BLM 1991a) identified likely disturbance to sage grouse leks near proposed mine activities (page 4-126, paragraphs 5 and 6). The BLM's ROD for that EIS delineated Barrick's obligation to mitigate the effects of the project on sage grouse (Measure #6).

It should be noted that during a February 1999 meeting between the Western Shoshone Tribal representatives and the BLM, the BLM biologists provided a status summary of sage grouse presence along the Carlin Trend, reiterating that Barrick has provided mitigation funding as a result of the original Betze Project EIS to minimize impacts to sage grouse. Information also was provided during this meeting regarding the dramatic improvement of riparian and meadow habitats for sage grouse from the Newmont SOAP mitigation in the Carlin Trend area. The mitigation discussion in the SEIS reflects the mitigation funds established for the on- and off-site protection and restoration of sage grouse affected by Barrick's mining activities. Refer to Appendices A (Mitigation Plan) and B (Upper Willow Creek Habitat Enhancement Plan) for additional specific sage grouse mitigation measures.

Letter 8 Continued

8-6 **Environmental Justice**

Potential impacts expressed in the SEIS, CIA and SOAPA disproportionately impact the Western Shoshone Nation, because of our dependence on these lands for traditional cultural practices. This is an environmental justice issue. Elko is identified as the nearest minority community aand is apparently the only source contacted for data. The Western Shoshone communities in Crescent Valley and Battle Mountain are approximately the same distance from the Betze mine as Elko.

8-7 **The Amendment Violates the Requirement to "Prevent Unnecessary or Undue Degradation"**

The mine, as proposed, and cumulative impacts in the Carlin Trend represent *undue and unnecessary degradation* and may not be permitted. Neither the Gold Quarry Expansion, nor the Betze-Post Project should be allowed to continue without significant mitigation of the dewatering which includes reinfiltration into the Tertiary formations and reinjection into bedrock.

The degradation caused by this and any future mine dewatering in the Carlin Trend is undue for the following reasons, inter alia:

1. Beaver Creek, Little Beaver Creek, Coyote Creek, Little Jack Creek, Indian Creek, Cottonwood Creek, Lynn Creek, Simon Creek, Willow Creek, Rock Creek, Boulder Creek, Bell Creek, Brush Creek, Rodeo Creek, Upper Antelope Creek (and its tributaries), Squaw Creek, Marys Creek, Susie Creek and Maggie Creek may all experience significant decreases in baseflows. Neither the Nevada Water Pollution Control Act (NWPCA), nor the Clean Water Act (CWA) allow a project to eliminate or degrade a beneficial use in a stream. Under the BLM's §3809 regulations, the BLM cannot approve a mining plan of operations that will violate water quality standards. Since the maintenance of all beneficial uses is a water quality standard, the failure to fully maintain all uses cannot be authorized.

2. There are over 67 springs potentially affected by the drawdown. Dried riparian areas and seeps cannot be adequately mitigated.

3. Cumulatively, there are over 30,000 acres of disturbance in the Tuscarora Mountains. Mines have disrupted migratory routes for many species, eliminated nesting areas for sensitive species, destroyed sage grouse breeding areas (leks), and dried springs. While some reclamation will occur, the final product is never a replacement for undisturbed natural ecosystems. Reclamation of waste rock, tailings and cyanide heaps is simply a cover over a toxic dump. "Reclamation is like putting lipstick on a corpse."

4. There is a substantial likelihood that the pit lakes will violate water quality standards. The Betze-Post Pit is predicted to exceed Nevada drinking water standards.

5. The BLM and NDEP must assure that no seepage from tailings or waste rock will reach any surface water, now or in the future. Failure to do so violates the Clear Water Act (CWA) and contributes to the undue degradation.

Responses to Letter 8

8-6 The BLM contacted regional tribes and bands to solicit information on these issues and to provide results of the analyses conducted for the SEIS during a 3.5-year period of Native American consultation. The text has been revised in Chapter 2.0 to acknowledge these additional groups. These groups were contacted during Native American consultation.

8-7 Number 1 – As explained in Section 1 of the Draft SEIS, the SEIS is intended to provide an updated evaluation of potential impacts to water resources and water-dependent resources associated with dewatering and water management activities at the Goldstrike Mine. The dewatering activities associated with the Goldstrike Mine were previously authorized by the BLM (BLM 1991d, 1994c). The maximum extent of the 10-foot drawdown cone resulting from dewatering at the Goldstrike Mine, and areas where perennial waters could potentially be impacted within the drawdown cone, are shown on Figure 3.2-29. This figure and the discussions under the heading "Impacts to Perennial Springs and Streams" in the Draft SEIS describe springs and streams that could be impacted. The SEIS analysis indicates that many of the streams listed in the comment, including Beaver, Little Beaver, Coyote, Little Jack, Indian, Cottonwood, Lynn, Simon, Willow, Rock, Marys, Susie, and Maggie creeks are unlikely to be affected by Barrick's dewatering operations. Some of these streams are located within the cumulative drawdown area, which represents the combined drawdown associated with the Goldstrike, Gold Quarry, and Leeville Mines (see Section 5.2 of the Draft SEIS). As described in the response to comment 8-3, the BLM believes that the monitoring and mitigation measures stipulated in the Betze Record of Decision (BLM 1991d), including the Wetland Mitigation Fund (to pay for enhancement of replacement of riparian and wetland areas), the Long-term Monitoring Trust Fund (for monitoring after year 2030), and the Long-term Environmental Monitoring and Mitigation Fund (for monitoring and mitigation of unexpected impacts not predicted by the 1991 EIS), combined with the additional spring and stream mitigation measures contained in Appendix A, would mitigate potential anticipated and unanticipated impacts associated with Barrick's dewatering.

The Clean Water Act defers to the states the authority to allocate quantities of water [33 U.S.C. § 1251(g)]. The Clean Water Act is directed at protecting water quality through the regulation of pollutant discharges into waters of the U.S. Barrick has obtained the necessary permits and authorizations from the Nevada State Engineer's Office for the water associated with its dewatering operations. Discharges of pollutants to waters of the state are regulated by a water pollution control permit issued by the NDEP. The BLM believes that with the appropriate monitoring and mitigation measures and financial sureties in place, the currently permitted project should not cause unnecessary or undue degradation to public lands or violate federal or state water quality laws.

Number 4 - The State of Nevada has not established water quality standards specific to pit lakes. Water quality standards for specific waters are based on the beneficial use of the water. As explained in the Draft SEIS, the pit lake is not intended to be a drinking water source for humans or livestock or used for recreational swimming. Therefore, standards to protect the lake as a drinking water source, livestock water supply, or for recreational swimming, are not applicable. Potential impacts on waterfowl or wildlife have been addressed in Section 3.4.2.3 in the Draft SEIS. Therefore, the pit lake is not expected to exceed or violate applicable water quality standards.

Letter 8 Continued

6. Cummulatively, mine dewatering along the Carlin Trend will significantly impair traditional cultural practices and adversely impact the integrity of National Register eligible properties. The BLM's failure to both adequately consult and mitigate will result in violations of, inter alia, the National Historic Preservation Act and the Trust Responsibility.

An inadequate review period precludes a thorough exploration of the above referenced issues. However, several issues will be more fully explored below.

BLM's regulations describe unnecessary or undue degradation as follows:

Unnecessary or undue degradation means surface disturbance greater than what would normally result when an activity is being accomplished by a prudent operator in usual, customary, and proficient operations of similar character and taking into consideration the effects of operations on other resources and land uses, including those resources and uses outside the area of operations. Failure to initiate and complete reasonable mitigation measures, including reclamation of disturbed areas or creation of a nuisance may constitute unnecessary or undue degradation. Failure to comply with applicable environmental protection statutes and regulations thereunder will constitute unnecessary or undue degradation.
43 CFR § 3809.0-5(k).[1]

8-7 The relevant standards for beneficial uses follow.

1. The following standards are intended to protect both existing and designated beneficial uses and must not be used to prohibit the use of the water as authorized under Title 48 of NRS:
(a) Watering of livestock. The water must be suitable for the watering of livestock without treatment.
(b) Irrigation. The water must be suitable for irrigation without treatment.
(c) Aquatic life. **The water must be suitable as a habitat for fish and other aquatic life existing in a body of water**. This does not preclude the reestablishment of other fish or aquatic life.
(d) Recreation involving contact with the water. There must be no evidence of manmade pollution, floating debris, sludge accumulation or similar pollutants.
(e) Recreation not involving contact with the water. The water must be free from:
(1) Visible floating, suspended or settled solids arising from man's activities;
(2) Sludge banks;
(3) Slime infestation;
(4) Heavy growth of attached plants, blooms or high concentrations of plankton, discoloration or excessive acidity or alkalinity that leads to corrosion of boats and docks;
(5) Surfactants that foam when the water is agitated or aerated; and
(6) Excessive water temperatures.
(f) Municipal or domestic supply. The water must be capable of being treated by conventional methods of water treatment in order to comply with Nevada's drinking water standards.

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[1] It should also be noted that the BLM's revised 3809 regulations will be issued in the coming month(s). The eventual decision whether to approve the Plan of Operations for this Project must comply with any new definition of "unnecessary or undue degradation," as well as other requirements. See U.S. BLM, Final EIS, Surface Management Regulations for Locateable Mineral Operations," October 2000.

Responses to Letter 8

Letter 8 Continued

8-7

(g) Industrial supply. The water must be treatable to provide a quality of water which is suitable for the intended use.
(h) Propagation of wildlife. **The water must be suitable for the propagation of wildlife and waterfowl without treatment.**
(i) Waters of extraordinary ecological or aesthetic value. The unique ecological or aesthetic value of the water must be maintained.
(j) Enhancement of water quality. The water must support natural enhancement or improvement of water quality in any water which is downstream.
NAC 445A.122, emphases added.

Assuming the measurements provided for Dunphy pertain to this reach, excessive water loss precludes the water use for aquatic resource and propagation of wildlife beneficial uses. Because some of the loss to the Humboldt River stems from the decreased flows in Maggie Creek, the sum of the lost flows will be seen from the confluence of the Humboldt with Susie Creek to the point in Boulder Flat that seepage from the irrigation recharge mounding begins to increase flows in the Humboldt River.

Decreasing flow rates in a stream by amounts varying from 50 to 100%, including the complete dessication of streams for several months, violates Nevada state water law. The standards on the previous page apply at least to all streams which are listed in NAC 445A.123 to NAC445A.127. Maggie Creek, its' tributaries and the Humboldt River are listed.

Because NAC 445A.121 extends standards to other waters, which would include Susie and Rock Creek, it is possible that dewatering them is also illegal. This is especially true because dewatering causes massive temperature increases which violate NAC 445A.121(4). Temperature increases occur because the surface area of the stream decreases much less than the flow rate. Sunlight heating the surface therefore inputs as much radiation to a smaller water volume.

Complete drying of a stream eliminates all habitat. This will undoubtedly occur on portions of several creeks during many years. The concomitant habitat decrease will violate the beneficial use requirements of the creeks and must not be allowed by the BLM.

Thus, the evidence is undisputed that all or portions of streams will be eliminated due to the operations currently under review by the BLM. Under FLPMA, the § 3809 regulations, and the Clean Water Act, these operations cannot be approved. All mining operations "shall comply with applicable Federal and State water quality standards...." 43 CFR § 3809.2-2(b).

8-8

Current Betze Dewatering and the Proposed Amendment Violates the Clean Water Act

The elimination of any waters due to mining operations violates the water quality standards for those stream reaches and thus could not be permitted. The goal of the Clean Water Act (CWA) is "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters." 33 U.S.C. § 1251(a). "The word 'integrity'. . . refers to a condition in which the natural structure and function of ecosystems [are] maintained." H.R. Rep. No. 92-911, at 76 (1972); see also Minnchaha Creek Watershed Dist. v. Hoffman, 597 F.2d 617, 625 (8th Cir. 1979). The legislative history of the Clean Water Act defines "natural" as "that condition in existence before the activities of man invoked perturbations which prevented the system from returning to its original state of equilibrium." H.R. Rep. No. 92-911, at 76. "Any change induced by man which

Responses to Letter 8

8-8 See the response to comment 8-7 (Number 1) regarding compliance with the Clean Water Act. The BLM believes that the currently permitted dewatering operations at the Goldstrike Mine will not violate federal or state water quality laws.

overtaxes the ability of nature to restore conditions to 'natural' or 'original' is an unacceptable perturbation." H.R. Rep. No. 92-911, at 77.

According to Congress, a primary goal of the CWA is to maintain the natural structure of streams. Such an interpretation is supported by case authority which holds that the "Clean Water Act should be construed broadly to encompass deleterious environmental effects of projects." Riverside Irrigation Dist. v. Andrews, 568 F. Supp. 583, 588 (D. Colo. 1983), aff'd 758 F.2d 508 (10th Cir. 1983). Dewatering a live stream violates the natural structure of the stream. As one recent case stated:

> The Clean Water Act (CWA) was "a bold and sweeping legislative initiative," United States v. Commonwealth of P.R., 721 F.2d 832, 834 (1st Cir. 1983), enacted to "restore and maintain the chemical, physical, and biological integrity of the Nation's waters." 33 U.S.C. §1251(a)(1994). "This objective incorporated a broad, systematic view of the goal of maintaining and improving water quality: as the House report on the legislation put it, 'the word "integrity" ... refers to a condition in which the natural structure and function of ecosystems [are] maintained.'" United States v. Riverside Bayview Homes, Inc., 474 U.S. 121, 132, 106 S.Ct. 455, 462 (1985) (quoting H.R.Rep. No. 92-911. at 76 (1972) U.S. Code Cong. & Admin.News 1972, at 3744).

Dubois v. U.S. Department of Agriculture, 102 F.3d 1273, 1294 (1st Cir. 1996).
Here it is clear that the elimination of streams and stream reaches noted above does not "maintain the natural structure and function of the ecosystem" in that watershed.
8-8 Under the CWA, states must adopt water quality standards for all water bodies within the state. 33 U.S.C. § 1313.

These standards include three components: (1) designated uses for each body of water, such as recreational, agricultural, or industrial uses; (2) specific limits on the levels of pollutants necessary to protect those designated uses; and (3) an antidegradation policy designed to protect existing uses and preserve the present condition of the waters.

National Wildlife Fed'n v. Browner, 127 F.3d 1126, 1127 (D.C. Cir. 1997) (citing 40 C.F.R. §§ 131.10 - 131.12).

"A water quality standard defines the water quality goals of a water body, or portion thereof, by designating the use or uses to be made of the water and by setting criteria necessary to protect the uses." 40 C.F.R. § 131.2. EPA implementing regulations define designated uses of water as "those uses specified in water quality standards for each water body or segment whether or not they are being attained." 40 C.F.R. § 131.3(f). The minimal designated use for a water body is the "fishable/swimmable" designation. See 33 U.S.C. § 1251(a)(2).

As noted above, many waters that will be severely degraded or outright dried-up by the operations are classified for beneficial uses by the State of Nevada. The U.S. Supreme Court has squarely held that:

The text [of the CWA] makes it plain that water quality standards contain two components. We think the language of § 303 is most naturally read to require that a project be consistent with *both* components, namely, the designated uses *and* the water quality criteria. **Accordingly, under the**

Letter 8 Continued

8-8 **literal terms of the statute, a project that does not comply with a designated use of the water does not comply with the applicable water quality standards.**

PUD No. 1 of Jefferson County v. Washington Department of Ecology, 511 U.S. 700, 714-715, 114 S.Ct. 1900 (1994)(italics emphasis in original, bold emphasis added).

8-9 The dewatering also violates state and federal antidegradation regulations. According to federal regulation, applicable antidegradation policies "shall, at a minimum, be consistent with . . . [e]xisting instream water uses and the level of water quality necessary to protect the existing uses shall be maintained and protected." 40 C.F.R. § 131.12(a)(1). Under this regulation, "'**no activity is allowable . . . which could partially or completely eliminate any existing use**.'" PUD No. 1, 511 U.S. at 718-19, 114 S.Ct. at 1912 (emphasis added)(citing EPA, Questions and Answers on Antidegradation 3 (Aug. 1985)). Therefore, the antidegradation policy must be implemented in a manner consistent with the existing uses of all streams. Any activity which would even *partially* eliminate those uses is not permitted.

8-10 Under the CWA, the minimum designated use for navigable water is the "fishable/swimmable" designation, which "provides for the protection and propagation of fish, shellfish, and wildlife and provides for recreation in and on the water." 33 U.S.C. § 1251(a)(2). But the protection is not limited to streams which support fish: A water body composed of solely plants and invertebrates is also protected under the antidegradation policy. Bragg v. Robertson, 72 F. Supp.2d 642, 662 n.38 (S.D. W. Va. 1999) (citing EPA. Water Quality Standards Handbook § 4.4). Under federal regulations, limited degradation is permitted only where (1) the quality of the water exceeds levels necessary to support the fishable/swimmable use designation, and (2) the quality of water necessary to protect all existing uses is maintained. 40 C.F.R. § 131.12(a)(2).

By dewatering the streams, which by their very nature could not then support aquatic life, the operations would violate the stream standards and antidegradation policy. The quality and quantity of water necessary to protect existing aquatic life and other designated uses **must** be maintained. See 40 C.F.R. § 131.12(a)(2). Because dewatering all or portions of these streams would essentially turn the relevant portions of live streams into dead streams, incapable of supporting plants, fish and other wildlife, the operations cannot be authorized.

8-11 **Treaty Relationship and the Trust Responsibility**

The U.S. entered in to a Treaty of Peace and Friendship with the Western Shohsone Nation in 1863. This is an agreement between sovereigns, and continues to be in full force and effect. The current policy of the U.S. towards the Western Shoshone ignores this Treaty based relationship, denying the Western Shoshone the rights and responsibilities of a sovereign. In addition to violating the spirit of the Treaty of Ruby Valley the U.S. has failed to uphold its self proclaimed trust responsibility to Indian people. The Supreme Court has recognized the undisputed existence of a general trust relationship between the United States and the Indian people. Northwest Sea Farms v. U. S. Army Corps of Engineers, 931 F. Supp. 1515 (W.D. Wash. 1996) (quoting United States v. Mitchell, (*Mitchell II*) 463 U.S. 206, 225, 103 S. Ct. 2961, 2972, 77 L.Ed.2d 580 (1983). This obligation has been interpreted to impose a fiduciary duty owed in conducting any federal government action which relates to Indian Tribes. Nance v. Environmental Protection Agency, 645 F.2d 701, 711 (9th Cir.), cert. denied, 454 U.S. 1081 (1981). In a leading case, the

Responses to Letter 8

8-9 See the response to comment 8-7 (Number 1) regarding evaluation of environmental impacts and compliance with the Clean Water Act. The BLM believes that the currently permitted dewatering operations at the Goldstrike Mine will not violate federal or state water quality laws.

8-10 See the response to comment 8-7 (Number 1) regarding compliance with the Clean Water Act and comment 8-9 regarding compliance with antidegradation regulations. As stated previously, the BLM believes that the currently permitted dewatering operations at the Goldstrike Mine will not violate federal or state water quality laws.

8-11 Resolution of the Ruby Valley Treaty is a matter for the federal court system, not regulatory land management agencies or the NEPA process. As no specific resources are identified by treaty and no formal trust lands are involved, the BLM's actual fiduciary or trust responsibility is minimal. The BLM is required under federal law, regulation, and executive order to make a good-faith effort to seek information in the consultation process with federally recognized tribal governments and from tribal organizations (such as the Western Shoshone Defense Project) that may possess or have access to traditional knowledge. The BLM has satisfied this requirement, and the BLM and Barrick have developed a Mitigation Plan (Appendix A of the Final SEIS) to address the identified issues.

Letter 8 Continued

8-11 United States Supreme Court stated: [U]nder a humane and self-imposed policy...[the federal government] has charged itself with moral obligations of the highest responsibility and trust. Its conduct, as disclosed in the acts of those who represent it in dealing with the Indians, should therefore be judged by the most exacting fiduciary standards. Seminole Nation v. United States, 316 U.S. 286, 296-97 (1942).

8-12 The BLM has documents on file from both Shoshone leadership and traditional cultural practitioners indicating the importance of Rock Creek, Tosawihi Quarries and associated waters that date to at least the early 1980's. The BLM was involved in the beginning a review process for a Rock Creek reservoir in the mid 1990's, further documenting the continuing importance of these areas to traditional Western Shoshone cultural/spiritual practice.
Yet in the 8 years of preparing this document and the monthly information meetings over the past years, there is not a single monitoring or mitigation item which we can identify as being implemented to address Western Shoshone concerns. It is not enough to document what we feel, do something to respect it!

8-13 Because of the downstream impacts of dewatering and the potential to impact wildlife in the Humboldt/ Carson Sink areas, the BLM should consult with downstream Native communities who have use or have cultural affiliations with these areas. This would probably include communities in Winnemucca, Lovelock, Fallon, and perhaps Pyramid Lake.

8-14 After having reviewed the Draft Supplemental Environmental Impact Statement (DSEIS) for Barrick's Betze-Post Project, as well as the Draft EIS for Newmont's SOAPA and the Cumulative Impact Analysis (CIA) for the Carlin Trend, we are left with the uneasy feeling that the federal government, as represented by the BLM, has failed to conduct itself in accordance with the most exacting fiduciary standards. This failure is evidenced throughout the three environmental review documents. Models of questionable accuracy are continually relied upon, significant impacts are played down or ignored, reasonable alternatives summarily dismissed, and adequate mitigation measures inadequately discussed.

While we have not been able to perform a complete evaluation of these documents we hope that you will address our concerns.

Sincerely,

Christopher Sewall

Carrie Dann
citizen, Western Shoshone Nation
acting director, WSDP

Responses to Letter 8

8-12 See the responses to comments 6-2 and 8-2 regarding potential impacts to these resources and the associated monitoring and mitigation measures.

8-13 The BLM has not received an indication of Native American interest from most of the communities noted during the NEPA process for the Betze SEIS. The Pyramid Lake Paiute Tribal Council has participated in the NEPA process (see Letter 6).

8-14 Your opinion regarding these issues is noted.

Letter 9

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November 14, 2000

Mr. Kirk Laird, SEIS Coordinator
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Bureau of Land Management
3900 East Idaho St.
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Re: Betze-Post Supplemental Environmental Impact Statement (SEIS)

Dear Mr. Laird:

Thank you for this opportunity to review the Betze-Post SEIS. We submit these comments on behalf of ourselves and the Mineral Policy Center. We included comments on the Cumulative Impacts Analysis for dewatering in the Humboldt River (CIA) in our SOAPA DEIS comment letter. Please consider those comments as they pertain to Betze-Post.

These comments are postmarked by November 14, 2000, and are therefore timely based on the summary and abstract in the SEIS.

We are very disappointed that the BLM released this document to coincide with the release of the SOAPA document. The SEIS has been in preparation for seven years while the SOAPA DEIS was in preparation for five years. It is more than coincidental therefore that they came out at the same time. The information in both is very complex and it was not possible to give both of these documents a thorough review at the same time. For example, we received copies of the Betze-Post Pit Lake model to review but will have had insufficient time to complete the review. Therefore, we reserve the right to submit additional and supplementary comments in the future on the FSEIS and at other opportunities.

As we wrote in our comments on the SOAPA DEIS, **mining in the Carlin Trend has reached the point of "undue degradation"**. This includes the drying of streams which violates the Clean Water Act and drawdown which affects resources far offsite. There is no question that Barrick is one of the two primarily responsible parties for this degradation. In fact, existing violations are primarily the fault of Barrick.

Proposed Mitigation

9-1 It is not possible to mitigate decreased flows in a river or spring; it is only possible to replace the water with an existing water right if the loss occurs at the right location. Augmenting or replacing flows by drilling wells or piping water from other sources" does not maintain the functionality of the spring or riparian areas. It may protect a water right holder, but riparian areas and aquatic resources do not have water rights.

The same holds for springs. It may be impossible to mitigate the loss of a spring. Piping water would cause more degradation and not maintain the character of the spring. Drilling a well near the site to provide water would just exacerbate the problem. Guzzlers disturb land

Every truth passes through three stages before it is recognized. In the first, it is ridiculed. In the second, it is opposed. In the third, it is regarded as self-evident. Schopenhauer

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9-1 The BLM believes it may be possible to mitigate decreases in stream or spring flows; flow augmentation at an appropriate location may maintain the functionality of a stream or spring and its riparian area.

There are several reasons why piping water to upper Maggie Creek for reinjection was not considered in the SEIS, as explained below. The piping and reinfiltration system would require movement of excess mine dewatering water from the Barrick dewatering system located in the Boulder Flat HA, for reinfiltration/reinjection into the Maggie Creek HA. Barrick's current water management system is designed to keep excess mine dewatering water within the Boulder Flat HA where the pumping occurs, as required by the State Engineer. Based on the ground water model results, the aquifer does not have the capacity to hold additional water from reinjection in this area. In addition, as explained in the response to comment 1-2, the areal extent of impacts associated with Barrick's mine dewatering and water management system is projected to be less than originally predicted and mitigated for in the original Betze Project EIS and the Meikle Mine EA. As discussed in the response to comment 3-5, interest-bearing funds were established in1991, as required by the Betze Project EIS ROD, to provide for monitoring and mitigation of predicted and unforeseen impacts to water-dependent resources resulting from mine-induced drawdown. In summary, the BLM's evaluation has concluded that the long-term monitoring and mitigation funding, other monitoring and mitigation measures in place, and additional measures outlined in Appendix A of the Final SEIS, will provide adequate protection for water-dependent resources in the upper Maggie Creek basin.

The Mitigation Plan (see Appendix A of the Final SEIS) provides on-site and off-site mitigation for potential riparian impacts, in addition to the existing Riparian Mitigation Fund.

Letter 9 Continued

and use only runoff from precipitation; they would not adequately replace a spring. Thus, the impacts of losing springs are unmitigable.

9-1 There are two truly satisfactory methods of mitigating the dewatering in the Carlin Trend by both Barrick and Newmont. The first is to **recharge dewatering water** in the upstream part of Maggie Creek. This proposal was described in detail in our SOAPA DEIS comments. For the purposes of brevity, we refer you to that document. However, to be most effective, more water than Newmont is pumping is required. Therefore, Barrick should provide some water for the recharge operations. It could be piped into the Maggie Creek area along the access road from Maggie Creek to minimize disturbance.

9-2 For Barrick, an alternative is to recharge or reinject water in such a way that Rock Creek and Antelope Creek will be protected. We have not worked this out in as much detail as we did the concept in Maggie Creek, but clearly the injection of water into the upper Antelope Creek watershed and the Sheep Creek Range near where the expanding drawdown cone reaches would help protect these streams.

9-3 The second necessary mitigation is the **restoration of the Argenta Marsh**. This concept is mentioned in the SEIS, but not fully proposed. Because Barrick has and will continue to destroy riparian and wetland habitat, it has a moral and legal responsibility to replace this habitat. Current dewatering water could be used to restore the Argenta Marsh. Because the water will not be permanently available, the restoration should include two additional aspects. First, Barrick should dedicate some of its surface water rights to the long-term use at the marsh. This could supplement other available rights, say those owned by the Bureau of Reclamation or Pershing County Water Conservancy. Second, the restoration should include a well restored channel with riparian vegetation. It should not be a braided, wetland type channel that would require much water. A meandering (sinuosity of around 2.0) channel vegetated with willows and cottonwoods (if native in this reach) would provide a valuable habitat on a river that has been totally degraded over many years. The dewatering water will provide the consistent source needed to establish new vegetation that will be able to survive after the extra water is not available. The final open water surface may also be narrowed so that evaporation losses are less.

9-4 The BLM should include in the final SEIS an analysis of these mitigation alternatives. For the reinjection alternatives, the analysis should include detailed groundwater modeling. For the Argenta Marsh restoration, the analysis should consider the required water rights, the consumptive use of the ultimate project, and the amount of restored habitat.

9-5 **The Betze-Post mine violated and continues to violate the Clean Water Act by drying Rodeo and Brush Creek.**

The SEIS basically describes several violations of the Clean Water Act. "Noticeable changes to seasonal streamflow durations are evident for Rodeo Creek and Brush Creek in the vicinity of Betze-Post Pit. Formerly perennial or frequently flowing intermittent reaches of these streams **are now dry during much of the year**." SEIS at 3-98, emphasis added. "These or similar impacts **were predicted in the Betze Project final EIS**, and related mitigation measures were identified in Section 2.3.4 of that document. Id, emphasis added, citation omitted. Thus, the BLM in its original approval of this project approved an illegal plan. The drying has already had substantial negative impacts. "The flow and vegetation in Brush Creek, a tributary to Rodeo Creek, have changed substantially since 1993, indicating that this drainage has been impacted by mine dewatering. **Brush Creek has been dry** since 1994. Wetland species have been **eliminated**, and **vegetation coverage has been reduced** from 79 percent in 1993 to less than 24 percent in 1998." Id, emphases added, citations omitted.

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9-2 With respect to Rock Creek, as shown in Figure 3.2-22 of the Draft SEIS, Barrick's historic infiltration and reinjection activities have resulted in the mounding of ground water in the bedrock aquifer in portions of the Boulder Creek HA and Sheep Creek Range southwest of the mine. This mounding will tend to reduce the potential for drawdown to propagate toward the lower perennial reach of Rock Creek. In addition, Barrick's calibrated model was used to simulate the mine-induced drawdown associated with the Goldstrike Mine. The results in Figures 3.2-23 through Figures 3.2-26 of the Draft SEIS show that drawdown from the Goldstrike Mine is not projected to extend to Rock Creek. Barrick's modeling results for the cumulative drawdown scenario (which includes the Goldstrike, Gold Quarry, and Leeville mines, presented in Appendix D 1.0 in the Cumulative Impact Analysis, BLM 2000b) also indicate that the cumulative cone of drawdown is not projected to extend to Rock Creek. Based on Barrick's monitoring and modeling results, impacts to flows in Rock Creek appear unlikely. As explained in the Draft SEIS and in the CIA (BLM 2000b), simulations using Newmont's numerical model for the combined dewatering at the Goldstrike, Gold Quarry, and Leeville mines suggest that flows in lower Rock Creek could be reduced. Although Barrick disagrees with the conclusions of the Newmont model, under the SEIS Mitigation Plan (Appendix A), Barrick has committed to mitigate potential reductions in lower Rock Creek flows by conveying a 1.5 cfs in-stream flow right to the Nevada Division of Wildlife and BLM.

Regarding Antelope Creek, as shown in Figure D-6 of the Draft SEIS, the NEPA analysis for the 1994 Meikle Mine (BLM 1994a,c) indicated that the Goldstrike Mine drawdown cone was projected to eventually encompass perennial sections of Antelope Creek. The recalibrated model simulations used for the SEIS also indicate that drawdown could affect this area; however, the projected drawdown is less extensive than previously predicted in the 1994 EA. As presented in Appendix A of the Final SEIS, ground water levels will be monitored through the mine life and for an extended period postmining to track the cone of drawdown between the Goldstrike Mine and Rock and Antelope Creeks. The BLM has mitigation funds under the original Betze Project EIS ROD to address potential impacts to water resources and riparian habitat. These funds could be used in a variety of ways (including onsite and offsite mitigation) to offset impacts to water-dependent resources.

9-3 Barrick's dewatering operations are not predicted to affect either the Humboldt River or the Argenta Marsh. The Argenta Marsh was purposely drained, and the water rights were acquired for the Rye Patch Reservoir prior to the onset of Goldstrike Mine operations. There is no connection between the Argenta Marsh Restoration Project and the Goldstrike Mine. See the response to comment 3-9 regarding restoration of the Argenta Marsh and the response to comment 3-21 regarding potential mitigation for pit lake evaporation. The BLM and Barrick have developed offsite mitigation measures (see Appendix A of the Final SEIS) for riparian enhancement.

9-4 Additional analysis of reinjection or evaluation of an alternative that would include restoration of the Argenta Marsh is not warranted; see the responses to comments 9-1, 9-2, 9-3, and 3-21 for a more detailed discussion.

9-5 See the response to comment 8-7 regarding the Clean Water Act.

9-6

The elimination of any waters due to mining operations violates the water quality standards for those stream reaches and thus could not be permitted. The goal of the Clean Water Act (CWA) is "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters." 33 U.S.C. § 1251(a). "The word 'integrity'. . . refers to a condition in which the natural structure and function of ecosystems [are] maintained." H.R. Rep. No. 92-911, at 76 (1972); see also Minnehaha Creek Watershed Dist. v. Hoffman, 597 F.2d 617, 625 (8th Cir. 1979). The legislative history of the Clean Water Act, in turn, defines "natural" as "that condition in existence before the activities of man invoked perturbations which prevented the system from returning to its original state of equilibrium." H.R. Rep. No. 92-911, at 76. "Any change induced by man which overtaxes the ability of nature to restore conditions to 'natural' or 'original' is an unacceptable perturbation." H.R. Rep. No. 92-911, at 77.

According to Congress, a primary goal of the CWA is to maintain the natural structure of streams. Such an interpretation is supported by case authority which holds that the "Clean Water Act should be construed broadly to encompass deleterious environmental effects of projects." Riverside Irrigation Dist. v. Andrews, 568 F. Supp. 583, 588 (D. Colo. 1983), aff'd 758 F.2d 508 (10th Cir. 1983). Dewatering a live stream violates the natural structure of the stream. As one recent case stated:

> The Clean Water Act (CWA) was "a bold and sweeping legislative initiative," United States v. Commonwealth of P.R., 721 F.2d 832, 834 (1st Cir. 1983), enacted to "restore and maintain the chemical, physical, and biological integrity of the Nation's waters." 33 U.S.C. §1251(a)(1994). "This objective incorporated a broad, systematic view of the goal of maintaining and improving water quality: as the House report on the legislation put it, 'the word "integrity" ... refers to a condition in which the natural structure and function of ecosystems [are] maintained.'" United States v. Riverside Bayview Homes, Inc., 474 U.S. 121, 132, 106 S.Ct. 455, 462 (1985) (quoting H.R.Rep. No. 92-911, at 76 (1972) U.S. Code Cong. & Admin.News 1972, at 3744).

Dubois v. U.S. Department of Agriculture, 102 F.3d 1273, 1294 (1st Cir. 1996). In this case, the elimination of Brush and Rodeo Creeks destroys "the natural structure and function of the ecosystem" in that watershed.

Under the CWA, states must adopt water quality standards for all water bodies within the state. 33 U.S.C. § 1313.

> These standards include three components: (1) designated uses for each body of water, such as recreational, agricultural, or industrial uses; (2) specific limits on the levels of pollutants necessary to protect those designated uses; and (3) an antidegradation policy designed to protect existing uses and preserve the present condition of the waters.

National Wildlife Fed'n v. Browner, 127 F.3d 1126, 1127 (D.C. Cir. 1997) (citing 40 C.F.R. §§ 131.10 - 131.12).

> "A water quality standard defines the water quality goals of a water body, or portion thereof, by designating the use or uses to be made of the water and by setting criteria necessary to protect the uses." 40 C.F.R. § 131.2. EPA implementing regulations define designated uses of water as "those uses specified in water quality standards for each water body or segment whether or not they are being attained." 40 C.F.R. § 131.3(f). The minimal designated use for a water body is the "fishable/swimmable" designation. See 33 U.S.C. § 1251(a)(2).

9-6 See the response to comment 8-7 regarding the Clean Water Act.

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The U.S. Supreme Court has squarely held that:

> The text [of the CWA] makes it plain that water quality standards contain two components. We think the language of § 303 is most naturally read to require that a project be consistent with *both* components, namely, the designated uses *and* the water quality criteria. **Accordingly, under the literal terms of the statute, a project that does not comply with a designated use of the water does not comply with the applicable water quality standards.**

PUD No. 1 of Jefferson County v. Washington Department of Ecology, 511 U.S. 700, 714-715, 114 S.Ct. 1900 (1994)(italics emphasis in original, bold emphasis added).

The waters that have been severely degraded or outright dried-up by the operations are classified for beneficial uses by the State of Nevada by NAC 445A.121. These would include Brush and Rodeo Creek; dewatering them is illegal.

The dewatering also violates federal antidegradation regulations. According to federal regulation, applicable antidegradation policies "shall, at a minimum, be consistent with . . . [e]xisting instream water uses and the level of water quality necessary to protect the existing uses shall be maintained and protected." 40 C.F.R. § 131.12(a)(1). Under this regulation, "'**no activity is allowable . . . which could partially or completely eliminate any existing use.**'" PUD No. 1, 511 U.S. at 718-19, 114 S.Ct. at 1912 (emphasis added)(citing EPA, Questions and Answers on Antidegradation 3 (Aug. 1985)). Therefore, the antidegradation policy must be implemented in a manner consistent with the existing uses of all streams. Any activity which would even *partially* eliminate those uses is not permitted.

9-6

Under the CWA, the minimum designated use for navigable water is the "fishable/swimmable" designation, which "provides for the protection and propagation of fish, shellfish, and wildlife and provides for recreation in and on the water." 33 U.S.C. § 1251(a)(2). But the protection is not limited to streams which support fish: A water body composed of solely plants and invertebrates is also protected under the antidegradation policy. Bragg v. Robertson, 72 F. Supp.2d 642, 662 n.38 (S.D. W. Va. 1999) (citing EPA, Water Quality Standards Handbook § 4.4). Under federal regulations, limited degradation is permitted only where (1) the quality of the water exceeds levels necessary to support the fishable/swimmable use designation, and (2) the quality of water necessary to protect all existing uses is maintained. 40 C.F.R. § 131.12(a)(2).

By dewatering the Brush and Rodeo Creek, which, as evidenced by the SEIS, has eliminated aquatic life, the operations violate stream standards and antidegradation policy. The quality and quantity of water necessary to protect existing aquatic life and other designated uses **must** be maintained. See 40 C.F.R. § 131.12(a)(2). Current dewatering activities are illegal because they failed to protect the existing aquatic life.

Because the operations do not comply with state water quality standards either, the dewatering violates Section 313 of the Clean Water Act which requires compliance with "all Federal, State, interstate, and local requirements" for the discharge or runoff of pollutants on federal land. 33 U.S.C. § 1323. This section places a duty on federal agencies to comply with federal CWA requirements, in addition to state water quality standards. Additionally, CWA § 313 applies to both point source and nonpoint source discharges on federal land. See, e.g., Oregon Natural Desert Assoc. v. Dombeck, 172 F.3d 1092, 1098 (9th Cir. 1998) ("§ 1323 ... directs federal agencies 'engaged in any activity which may result in the discharge or runoff of pollutants' to comply with applicable water quality standards. 33 U.S.C. § 1323(a).").

Letter 9 Continued

9-6 Cumulatively, mines in the Tuscarora Mountains will eliminate portions of streams in the region[1]. An HCI study[2] predicts that the Post-Betze mine will cause a 1.5 cfs reduction in the 6.2 cfs baseflow of Rock Creek. (Please incorporate our comments on the SOAPA DEIS for additional discussion about how the study determined base flow averages.) The discussion of Rock Creek in SEIS ignores this prediciton and is generally devoid of much information. SEIS at 3-43. Continued dewatering by Betze-Post may result in a future violation of the Clean Water Act which also violates FLPMA, but the SEIS fails to discuss the possibility.

Moreover, under BLM regulations "[f]ailure to comply with applicable environmental protection statutes and regulations thereunder will constitute unnecessary or undue degradation." 43 CFR § 3809.0-5(k). Failure to prevent "unnecessary or undue degradation" mandates rejection of a mining plan of operations. "If there is unnecessary or undue degradation, it must be mitigated. See 43 CFR 3809.2-1(b). If unnecessary or undue degradation cannot be prevented by mitigating measures, BLM is required to deny approval of the plan. 43 CFR 3809.0-3(b)." Kendall's Concerned Area Residents, 129 IBLA 130 (1994).

The flow monitoring of Antelope Creek is insufficient and fails to protect its aquatic habitat.

9-7 The document describes monitoring along Antelope Creek. SEIS at 3-42. There were a series of streamflow measurements made along the upper reaches of Antelope Creek during 1993. The BLM concluded that "these (the measurements) suggest that perennial flows exist on these streams in the locale". Id. At the furthest downstream point, "the stream was dry". Id. Remarkably, this dry point is the one chosen as the "most upstream monitoring station" in the monitoring plan. Id. Because the site was dry in 1993, it is likely that this location is downstream of any point where the water table intersects with the stream. Flow monitoring at this point, and all of the further downstream points, merely monitor snowmelt and flood runoff. These components of runoff are only slightly impacted by dewatering. Thus, monitoring of Antelope Creek **completely fails to detect the impacts** of dewatering. It is likely that **CWA standards have also been violated** on Antelope Creek.

The BLM should **completely revise the monitoring plan** for Antelope Creek and any other creek that may have perennial flow upstream of the monitoring points.

The modeling of Antelope Creek may preclude its consideration for impacts due to drawdown.

9-8 Antelope Creek is a river boundary in the groundwater model. (MacDonald-Morrisey, Figure 25). If the water table intersects the boundary, the level is set by the boundary. This limits the expansion of the drawdown cone in the vicinity of the rivers.

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[1] Hydrologic Consultants Inc., 1999. Prediction of Potential Hydrologic Impacts of Dewatering Operations Along North Carlin Trend. HCI-878. May, 1999. Table 2. This report analyzed the cumulative and individual impacts from different mines in the Tuscarora Mountains. We have been told that this report was released prematurely, but we also point out that the Cumulative Impacts Analysis references it. Also, the report is based on the version of the groundwater model used for the DEIS and CIA; if there is anything wrong with the analysis in this report, there is also something wrong with the groundwater modeling in the DEIS. Therefore, we conclude that these numbers are still correct.

[2] Id.

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9-7 In response to the comment, an additional stream flow monitoring station has been established in the perennial reach of Antelope Creek. The monitoring station is located between ANT-1 and the confluence of Antelope Creek and Squaw Creek. The results of monitoring at this new station along Antelope Creek will be incorporated into the Boulder Valley Monitoring Plan. The location of the station and inclusion into the Boulder Valley Monitoring Plan are discussed in the Mitigation Plan, Appendix A of the Final SEIS.

9-8 Antelope Creek was simulated as a river boundary using the RIV2 package in the BGMI Modflow model. This type of boundary is not a constant head boundary and therefore does not provide an unlimited water supply that would prohibit expansion of the cone in the vicinity of the creek as suggested in the comment. The cone of drawdown described in Figure 3.2-25 in the Draft EIS shows that the drawdown crosses the creek, demonstrating that the creek is acting as a boundary, rather than as a barrier.

Letter 9 Continued

9-9 **The current water management keeps less water in the basin than the analysis indicates.**

Barrick credits itself with reinfiltrating more than 60%, of the total pumped volume. "At closure, the total pumped volume would be approximately 1,085,000 acre-feet with an estimated 645,000 acre-feet reinfiltrated to the ground water system through water management activities..." SEIS at 3-82. Even if this water is technically stored in the ground, even in the same State Engineer designated basin, it will not be available to fill the pit lake or the drawdown cone created by the dewatering. Partially, this is due to the reinfiltration and irrigation occurring in Boulder Flat downgradient from the open pit. However, the drawdown is so extensive that it would reverse the gradient. Because the reinfiltration occurs downgradient of the Siphon Fault and, to a lesser extent, the Boulder Narrows Fault, the reinfiltrated water will be prevented from flowing back to the northeast to replenish the deficits. "[T]he fault acts as a pronounced barrier that separates the drawdown cone developed from mine dewatering activity north of the fault from the ground water mound developed from the infiltration activities south of the fault." SEIS at 3-30.

The final document should estimate the flow from the reinfiltration mounds to the northeast using the groundwater model. This would verify whether the model simulates the conceptual model of little flow across the faults. When discussing the reinfiltration, it should also **emphasize that reinfiltrated water will not be available** to replenish the deficit. After mining and the reinfiltration ceases and water levels in the Boulder Flat return to premining levels, the mound will dissipate. Because the faults prevent its northeasterly movement, it **must flow to the south and southwest into the Humboldt River**. The BLM **failed to consider the impacts of this discharge** to the Humboldt River. Seepage may require a NPDES permit; Barrick's current discharge permit apparently does not include seepage to the river. Please refer to our comments on the SOAPA DEIS for discussion of the Clean Water Act requirements on this seepage.

9-10 In addition to the faults, the discussion does not acknowledge that dewatering is from bedrock aquifers while reinfiltration is mostly to the alluvial aquifers. Depending on the connection between aquifers, little of the reinfiltration water may actually reach the bedrock. The discussion should indicate the amount of water that flows from surface layers to lower layers in the model.

9-11 **Discussion of flow statistics are overly simplistic.**

The SEIS makes several references to how unrepresentative the mean flow actually is. "For example, from Table 3.2-11 the average peak flow (June flow) at Argenta from 1946 to mid-1990 is 1,146 cfs; the standard deviation for the same month over the same period is 1,037 cfs." SEIS at 3-63. This is a coefficient of variation of almost 1.0. In a normal distribution the mean plus or minus the standard deviation contains about 66% of the data. The remainder lies outside of this range with half being higher and half being lower. When the CV is 1.0, to be less than the mean minus the standard deviation would be to be less than 0.0. "Average monthly flows on the river are exceeded between 20 and 40 percent of the time." Id. Both of these quotes indicate that the monthly flows are exponentially distributed. The mean is a less useful descriptor for considering the long-term trends. In this SEIS, the mean is used to compare the impacts due to dewatering. We encourage the BLM to use the median, mode and 80% exceedence values to determine the Humboldt River gains and losses in Tables 3.2-13 and 3.2-14. It will probably be seen that the gains and losses are as variable as the flows and depend on the antecedent conditions.

9-12 **Pit Lake Modeling**

As discussed above, we did not have sufficient time for a detailed review of the pit lake model. The results reported in the SEIS are contradictory however. TDS values indicated on Table 3.2-25 do not match those

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9-9 As illustrated in Figure 3.2-22 in the Draft SEIS, this hydrostructural feature segregates the current drawdown cone from the area of mounding. Over the long term, the model simulations indicate that approximately 23,000 acre-feet (Barrick 2001a) of the total estimated 645,000 acre-feet of reinfiltrated water would move across the structure from the southwest.

As explained in the Draft SEIS and in the response to comment 2-21, recent studies by the USGS have shown that the Humboldt River loses baseflow as it flows across Boulder Flat. Discharge from the bedrock and alluvial basin-fill aquifer system in the Boulder Flat HA primarily occurs as evapotranspiration in lower Boulder Flat (Maurer et at. 1996; Berger 2000). Accordingly, an increase in the water table in Boulder Valley (due to the infiltration of excess mine water) is projected to result in a corresponding increase in evapotranspiration in Boulder Valley. Hence, the model simulations do not predict that the ground water mound formed in Boulder Valley will intersect the Humboldt River or increase baseflows in the river. Ground water elevation data from lower Boulder Valley also have confirmed that the existing mound has not propagated toward the Humboldt River (Barrick 1999a).

9-10 The Draft SEIS text beginning on pages 3-82 and 3-85 explains that most of the water is removed from the carbonate rocks in the hydrologic compartment bounded between the Siphon and Post faults, whereas reinfiltration is occurring in both the rhyolite bedrock and alluvial basin fill sequence in Boulder Valley.

Monitoring data provided in the BVMP (Barrick 1999a) indicate that most of the excess mine water has been reinfiltrated to the rhyolite bedrock aquifer rather than the alluvial system. Mounding and recharge to the alluvium has occurred due to lateral movement of ground water from the rhyolite bedrock to the alluvial aquifer, and to a lesser extent, from crop irrigation at the TS Ranch. For information regarding the movement of water between layers in the model, see McDonald and Morrissey Associates, Inc. model report (1998).

9-11 The comment implies that the mean historic flows for the Humboldt River were used as the sole baseline reference for evaluating impacts to the river, and that the assessment should have used the median, mode, and 80 percent confidence intervals for evaluating baseline conditions and determining impacts. As stated on page 3-120 of the Draft SEIS (and illustrated in Figures 3.2-36 and 3.2-37), and as explained in detail in the referenced report (RTi 1998), the analysis of potential changes to flows in the Humboldt River resulting from mine discharge were based on comparisons of simulated river flows with peak mine discharges occurring during the historic average year, historic low-flow year, and high-flow year based on streamflow records for 1946 through 1990. By using the historic average, low, and high flows as the basis for comparisons, the evaluation addressed the relative magnitude of flow changes that could potentially occur under an extreme range of natural, historic background river flow conditions. The use of the alternative statistical values suggested in the comment is another approach that could have been used in the evaluation. However, this approach would not have provided a frame of reference for evaluating the incremental increase in flows representing the mine discharges during the historic low- and high-flow years. The use of these statistical parameters would not have changed the overall conclusion of the analysis.

Letter 9 Continued

9-12 discussed on page 3-116. The table suggests that concentrations would decrease, a result inconsistent with the conclusion that the pit lake will be terminal with no flow-through. However, the discussion suggests a final (year 233) TDS equaling 740 mg/l.

9-13 The fact that the early years may have high acidity indicates that more initial inflow is through oxidized rock. Later, higher alkalinity groundwater will begin to neutralize the acidity. The implication is that all of the acid producing potential will be leached into the lake early in the process. All of our comments on the structure of the pit lake model in the SOAPA DEIS apply herein as well.

General Comments

9-14 1. There is a "circular sinkhole approximately 4 feet deep and 30 feet across located near spring 6". SEIS at 3-16. Dewatering has lowered the water table by over 1,100 feet. Id. What has been the effect on flow at the spring?

9-15 2. The discussion of the fracture in the TS Ranch Reservoir indicates that a "fraction of the water stored ...flowed out...through the fracture". Id. The document should specify the fraction.

9-16 3. Does the estimated 8,600 acre-feet/year of groundwater discharge from the Maggie, Marys and Susie Creek basins all enter the Humboldt River or does some of it become underflow along the river?

9-17 4. The BLM should document the incidence of drying on Susie Creek or remove it from the document. SEIS at 3-44.

9-18 5. In the discussion on surface water rights, the BLM should define the various water rights statuses including "ready for action", "certificated", "permits", "proofs", and "reserved".

9-19 6. The groundwater sample that has a low pH should be better explained. SEIS at 3-53. Is it an anomaly or does it represent the water in a certain region?

9-20 7. The document should specify the amount of water consumed by evaporation from ditches and reservoirs. SEIS at 3-57,58. Is the estimate based on an assumed duty?

9-21 8. The consumptive use of surface water in 1995 in the basin is about 540,000 acre-feet which is less than the total decree. SEIS at 3-58. The decree allows the use of 667,000 acre-feet per year. Please specify whether that is consumptive or total diversions. Also, the BLM should discuss this decree in some detail because the implication is that impacts of dewatering are small because it is a small proportion of the decreed rights. The Humboldt River is overappropriated by more than 200 percent and there is almost no way in which the total amount of decreed rights will ever be available for an entire year. Note that full decree rights would have to be met all year with no supplemental water for the total amount to be used.

9-22 As a part of a new discussion of the decreed rights, there should be additional discussion of the ability of the river to meet priorities. Most of the decreed diversions occur between March 15 and April 28 with much less occurring in later periods. Id. Do surface water rights on the Humboldt have supplemental groundwater rights? If so, what is the proportion of supplemental? The proportions presented on 3-58 indicate that on average the decree is not met.

This is important because SEIS uses this large number of decree rights to suggest that the dewatering

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9-12 The total dissolved solids (TDS) values presented in Table 3.2-25 in the Draft SEIS are consistent with the referenced pit lake modeling report (Radian International, LLC and Baker Consultants, Inc. 1997a). However, the TDS and sulfate concentrations in the text on page 3-116 were corrected to be consistent with the values provided in Table 3.2-25.

9-13 Comment noted.

9-14 The spring name (Spring 6) has been revised to Spring JBR6 for consistency. As discussed on page 3-91 and presented in Table 3.2-22, Spring JBR6 has been dry since 1992.

9-15 As of November 2000, an estimated 436,000 acre-feet had infiltrated through the fracture (Barrick 2001a). Barrick has an NDEP permit for infiltration through the fracture.

9-16 As noted at the bottom of Table 3.2-4 in the Draft SEIS, the estimated 8,600 acre-feet/year of ground water discharge from the Maggie Creek, Marys Creek, and Susie Creek areas to the Humboldt River is from the USGS report by Maurer et al. (1996). According to Maurer et al., this value represents the estimated ground water that discharges directly to the river channel from the three areas.

9-17 The statements in the text of the Draft SEIS that indicate that the USGS gaging station near the mouth of Susie Creek dries up in the summer on an annual basis are based on the USGS gaging data as summarized in Maurer et al. (1996, Figure 5B).

9-18 The status of surface water rights is identified in Table A-2 of the Draft SEIS. The terminology used to define water rights and applications for water rights in the Draft SEIS is based on the terms used by the Nevada Division of Water Resources (NDWR) and Nevada State Engineer and defined in the Nevada Statutes. The water rights information provided in the Draft SEIS was intended to summarize the water rights within the hydrologic study area. For explanations and definitions of the individual water rights (and applications for water rights) statuses, please refer to the NDWR and Nevada Statutes.

9-19 Additional text (page 3-53) was added to indicate that the two springs with low pH values (taken below a historic waste rock pile in the Beaver Creek drainage area, outside of the area of current mining activities) were anomalous when compared to the other 399 analyses for springs in the region.

9-20 The Draft SEIS discussion of water uses on pages 3-58 and 3-59 is a general description of background conditions in the Humboldt River basin. Published estimates of evaporation losses from Rye Patch and Pitt-Taylor reservoirs are provided on page 3-59. The consumptive use information presented in the Draft SEIS text and in Appendix C is based on information published by the Nevada Department of Conservation and Natural Resources, as referenced. Regional evaporation estimates are presented on pages 3-22 and 3-27. As discussed in the text and the references cited, consumptive use estimates vary considerably among sources, times, and locations. The SEIS assessment is based on reasonable approximations of these factors for the purpose of making comparisons. Further detail regarding evaporative losses from ditches and reservoirs would not add substantial new information to the impact assessment and is unlikely to change its outcome. Evaporative losses vary substantially from time to time and location to location along the river, depending on irrigation practices, ditch characteristics, flow rates, and weather.

Responses to Letter 9

9-21 The estimate of 540,000 acre-feet of consumptive use is based on 49 percent of the total surface water withdrawal for 1995 (1,111,100 acre-feet), as shown in Table C-4 in Appendix C of the Draft SEIS and presented in Horton (1988). This value is presented as a general approximation based on the information published by the State of Nevada Division of Water Planning in late 1998. The 667,000 acre-feet of decreed and permitted water usage in the basin is described in the reference Humboldt River Water Distribution, Part 1 - Problems (Hennen 1964), which is cited in the Draft SEIS. This amount is the decreed and permitted supply based on the potential fulfillment of priorities for the crops and acreage of land under irrigation. Further information on Humboldt River surface water rights is presented in the Draft SEIS on page 3-77, as a subsection of the description of the Humboldt River affected environment. Additional references on this subject are cited in the Draft SEIS for those readers who are interested in pursuing additional information.

The Draft SEIS does not imply that impacts of dewatering are small because the dewatering amounts are a small proportion of the decreed water rights. This is an incorrect interpretation of the conclusions of the analysis provided in the SEIS. The river is over-appropriated, and under those circumstances any flow reductions could result in impacts to water rights. However, as stated previously, Barrick's dewatering and drawdown is not expected to impact baseflows in the Humboldt River.

9-22 A detailed discussion of water rights along the Humboldt River, including water right decrees, is not necessary for the purpose of the SEIS. As stated in the Draft SEIS, Barrick is not currently planning further discharges to the river. However, if future discharges to the river do occur, a large percentage of the water would likely be taken up in most years by irrigation demand under the condition of over-appropriation that already exists. In most years, there is not enough water to meet priorities. In addition, as stated in the response to other comments and in the Draft SEIS, drawdown associated with the Goldstrike Mine is not predicted to impact or decrease baseflow within the river. Therefore, Barrick's dewatering and mine-induced drawdown are not anticipated to reduce the water available to satisfy existing water rights.

In general, surface water supplies in Nevada are often supplemented with ground water supplies by a landowner or other user. However, separate applications and permits for separate points of diversion are required for this to occur; the ground water rights do not automatically activate to supplement a shortfall in surface water supply. Both sources are adjudicated in Nevada and are administered by the State Engineer in accordance with priority and proven beneficial use.

Letter 9 Continued

9-22 amounts are small.

9-23 9. The assumptions in the return flow discussion require much additional explanation. Id. Both return flow amounts and their monthly distribution depend on substantial **assumptions** that are provided without reference or explanation.

9-24 10. There should be a discussion of available irrigation diversion records. All of the analyses of flow losses would be improved if diversions were included because estimates natural and irrigation losses would be included. See for example the discussion on 3-72.

9-25 11. Is Betze-Post required to reclaim the areas being irrigated? If not, when they stop irrigation, they will likely become weed-infested. See SEIS at 3-105.

Thank you for considering our comments. We look forward to receiving the FSEIS with an analysis of the proposed mitigation.

Sincerely,

Tom Myers

Tom Myers, Ph.D.
Director

Enclosures

cc:
Roger Flynn, Western Mining Action Project

Responses to Letter 9

9-23 The assumptions about return flow amounts are clearly stated in the Draft SEIS on page 3-58. The fraction of diverted water that was assumed to be returned to the river (30 percent) was based on conversations with the Nevada State Engineer's Office (2001), and review of published information (Hennen 1964). The SEIS analysis used a reasonable approximation between these values, which were available at the time of the investigation. Historically, there has been disagreement over the return flow percentage (Hennen 1964), but it is known to vary widely with a number of factors and to be generally decreasing due to changes in agricultural crops grown in the basin. The return flow from all ranches is contained within the State Engineer's inventory of water available for distribution and is not monitored in the basin. Furthermore, diversions are not monitored in the Humboldt River basin (Hennen 1964; Nevada State Engineer's Office 2001); therefore, data on return flows as a fraction of diverted flows are not available.

The return flow timing is based on the parameters used in the Glover analysis, as summarized on page 3-58 in the Draft SEIS. These parameters likely vary throughout the basin, but they are thought to be reasonable approximations for the purpose of analyzing potential impacts for the SEIS.

9-24 Research by the EIS team during preparation of the SEIS indicated that accurate diversion records were not available for the portion of the Humboldt River basin evaluated. In addition, recent conversations with the Nevada State Engineer's Office (Nevada State Engineer's Office 2001) have confirmed that irrigation diversion records are not available. It is important to note that even if diversion records existed, natural and irrigation losses would be difficult to determine without accurate gaging data from both the headgate and the drain.

9-25 The irrigated croplands would not be reclaimed since these lands are privately owned properties. Refer to the response to comment 1-7 for a discussion of the irrigated lands.

Letter 10

NEWMONT MINING CORPORATION
427 Ridge Street, Suite C
Reno, Nevada 89501
(775)-784-8182 phone
(775)-784-8185 fax

2000 NOV 15 AM 10: 16

Kirk Laird, SEIS Coordinator
Bureau of Land Management
Elko Field Office
3900 East Idaho Street
Elko, NV 89801

November 14, 2000

Dear Mr. Laird:

Newmont Mining Corporation submits these comments on the Bureau of Land Management's Draft Supplemental Environmental Impact Statement for Barrick Goldstrike Mines Inc.'s Betze Project, dated September 2000 ("draft SEIS").

10-1 At page 5-6, the draft SEIS explains that, in several drainages, the difference between the predicted maximum projected groundwater drawdown from the Goldstrike Mine alone, compared to the projected drawdown resulting from all of the projects that were considered in the Cumulative Impact Analysis ("CIA") is the result of the different models that were used to evaluate Goldstrike Mine-only dewatering and cumulative dewatering. However, at other places in Chapter 5, the draft SEIS identifies potential cumulative impacts to groundwater levels and surface flows from mine dewatering in particular drainages, such as Maggie Creek and its tributaries, and simply states that the Goldstrike Mine is not projected to contribute to these impacts. Modeling has also shown that dewatering at Gold Quarry and Leeville will not have a direct effect on any groundwater drawdown in either the upper Maggie Creek tributaries or Rock Creek drainage. The SEIS should be revised to avoid any misunderstanding as to the potential effects of the other mine projects evaluated in the CIA.

Thank you for the opportunity to comment on the draft SEIS.

Sincerely,

John K. Mudge
Director, Environmental Affairs

Responses to Letter 10

10-1 The referenced section discusses the incremental contribution of dewatering at the Goldstrike Mine to the cumulative drawdown cone. Within this context, this section also discusses the uncertainty associated with the CIA cumulative drawdown cone. This section only discusses Barrick's incremental contribution to the cumulative drawdown, and does not attempt to address or discuss the direct impacts associated with the other projects within the cumulative drawdown area. The direct, indirect, and cumulative impacts associated with the Gold Quarry and Leeville mines is addressed in each of their respective project EIS documents.

Letter 11

Bureau of Land Management
Elko Field Office
1300 East Idaho St.
Elko, NV 89801

BUREAU OF LAND MANAGEMENT
OFFICE
2000 NOV 13 PM 2:30

Attention:

KIRK LAIRD, SEIS COORDINATOR

Re:

MINE DEWATERING AFFECTS ON ALFALFA FARMERS

In recent newspaper articles, regarding the dewatering effects of mining within the Humboldt River basin, the focus seems to be primarily on wildlife, ranching, and downstream river concerns. However, this issue can have an extremely negative impact on small farming communities that also exist within this area. My family and I are members of one of those farming communities.

11-1 Our farm is located in the Clovers Area just north of Battle Mountain, Nevada, and we farm alfalfa hay using irrigation wells and pivot irrigation systems. We are totally dependent on groundwater, and suspect that mine dewatering, on top of drought years, has resulted in an overall drop in the water table level and in the natural recharge capacity of our watershed. When you take into consideration, that most farm irrigation wells in this area are only around 200-250 feet deep, a drop in just tens of feet can have a significant economic impact on farmers.

11-2 Maintaining sufficient water pressure for alfalfa farming seems to be a growing problem and concern in our area. Without an adequate water supply, we are unable to produce quality hay for sale, and having to drill new and deeper irrigation wells, imposes a monetary hardship for any small farmer.

11-3 Presently, it appears that the only mitigation by the surrounding mines has been to return water to the Humboldt River, to help develop wetlands, and to provide the Sierra Pacific power plant with water. However, these mitigations do nothing to address the economic problems, for nearby farming communities, that can result from long-term drops in the water table.

11-4 Furthermore, their alternative to not "wasting" water has been to acquire their own pivot irrigation systems and to use the water in growing hay. However, this does nothing to replenish the groundwater source, and just further exacerbates the issue for the small farmer. It is not enough that the mines may be threatening our livelihood, they are also creating undue competition for the small farmer.

So we would like to know whether any consideration is being given to farmers regarding the negative impact of continued mine dewatering, and what recourse do we have, if any?

Sincerely,

Russell Parker
signature

11-12-00
date

Name:	Russell + Tammy Parker
Address:	P.O. Box 129 Valmy Nev. 89820
Phone:	(775)-738-3921 (775) 635-9236

Responses to Letter 11

11-1 Monitoring performed pursuant to the BVMP has demonstrated that dewatering activities at the Goldstrike Mine have not affected the Clovers Area ground water basin; see also Figure 3.2-22 in the Draft SEIS. Numerical model simulations project that the maximum extent of the 10-foot drawdown contour resulting from dewatering activities at the Goldstrike Mine will not extend into (or near) the Clovers Hydrographic Area (HA) (see Figure 3.2-25 in the Draft SEIS). In addition, model simulations of the combined effects of dewatering at the Goldstrike, Gold Quarry, and Leeville mines also indicate that the combined (or cumulative) drawdown cone is not expected to extend into the Clovers HA. Therefore, mine dewatering from these mines is not expected to result in measurable drawdown of the water table or impacts to water supply wells in the Clovers HA.

11-2 Comment noted.

11-3 Barrick has been required by the State Engineer's Office to return as much dewatering water from the Goldstrike Mine as practicable to the subsurface in Boulder Valley and to provide water in substitution of valid irrigation water rights.

11-4 Although Barrick provides water in substitution of valid irrigation water rights, Barrick does not grow hay; hay is grown on the TS Ranch by ELLCO. The socioeconomic impacts of hay produced with dewatering water are discussed on page 3-228 of the Draft SEIS. The amount of hay produced with water from the Goldstrike Mine is expected to decline beginning with the 2001 irrigation season as Barrick's pumping rate declines. The operator of the hay fields may, however, continue the same level of hay production using his/her own water rights and wells.

Letter 12

Bureau of Land Management
Elko Field Office
1300 East Idaho St.
Elko, NV 89801

2001 NOV 13 PM 2:30

Attention: Re:

KIRK LAIRD, SEIS COORDINATOR) **MINE DEWATERING AFFECTS ON ALFALFA FARMERS**

In recent newspaper articles, regarding the dewatering effects of mining within the Humboldt River basin, the focus seems to be primarily on wildlife, ranching, and downstream river concerns. However, this issue can have an extremely negative impact on small farming communities that also exist within this area. My family and I are members of one of those farming communities.

12-1 Our farm is located in the Clovers Area just north of Battle Mountain, Nevada, and we farm alfalfa hay using irrigation wells and pivot irrigation systems. We are totally dependent on groundwater, and suspect that mine dewatering, on top of drought years, has resulted in an overall drop in the water table level and in the natural recharge capacity of our watershed. When you take into consideration, that most farm irrigation wells in this area are only around 200-250 feet deep, a drop in just tens of feet can have a significant economic impact on farmers.

12-2 Maintaining sufficient water pressure for alfalfa farming seems to be a growing problem and concern in our area. Without an adequate water supply, we are unable to produce quality hay for sale, and having to drill new and deeper irrigation wells, imposes a monetary hardship for any small farmer.

12-3 Presently, it appears that the only mitigation by the surrounding mines has been to return water to the Humboldt River, to help develop wetlands, and to provide the Sierra Pacific power plant with water. However, these mitigations do nothing to address the economic problems, for nearby farming communities, that can result from long-term drops in the water table.

12-4 Furthermore, their alternative to not "wasting" water has been to acquire their own pivot irrigation systems and to use the water in growing hay. However, this does nothing to replenish the groundwater source, and just further exacerbates the issue for the small farmer. It is not enough that the mines may be threatening our livelihood, they are also creating undue competition for the small farmer.

So we would like to know whether any consideration is being given to farmers regarding the negative impact of continued mine dewatering, and what recourse do we have, if any?

Sincerely,

Russell Parker
signature

11-12-01
date

Name:	Russell + Tammy Parker
Address:	P.O. Box 129 Valmy Nev. 89820
Phone:	(775)-738-3921 (775) 635-9236

Responses to Letter 12

12-1 Please see the response to comment 11-1.

12-2 Comment noted.

12-3 Please see the response to comment 11-3.

12-4 Please see the response to comment 11-4.

Letter 13

Bureau of Land Management
Elko Field Office
1300 East Idaho St.
Elko, NV 89801

RECEIVED
MANAGEMENT
OFFICE
2000 NOV 13 PM 2:31

Attention:

KIRK LAIRD, SEIS COORDINATOR

Re:

MINE DEWATERING AFFECTS ON ALFALFA FARMERS

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So we would like to know whether any consideration is being given to farmers regarding the negative impact of continued mine dewatering, and what recourse do we have, if any?

Sincerely,

Claudette McCain 11-11-00
signature date

Name:	Claudette McCain
Address:	HC 61 Box 30 Battle Mountain NEV 89820
Phone:	(775) 635-3198 (775) 575-1866

Responses to Letter 13

13-1 Please see the response to comment 11-1.

13-2 Comment noted.

13-3 Please see the response to comment 11-3.

13-4 Please see the response to comment 11-4.

Letter 14

Bureau of Land Management
Elko Field Office
1300 East Idaho St.
Elko, NV 89801

MANAGEMENT
OFFICE
2000 NOV 13 PM 2:31

Attention:

KIRK LAIRD, SEIS COORDINATOR

Re:

MINE DEWATERING AFFECTS ON ALFALFA FARMERS

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So we would like to know whether any consideration is being given to farmers regarding the negative impact of continued mine dewatering, and what recourse do we have, if any?

Sincerely,

G L Taylor
signature

11-13-00
date

Name:	Gregory L. Taylor
Address:	HC 61 Box 15 Battle Mtn., NV. 89820
Phone:	775-635-2888

Responses to Letter 14

14-1 Please see the response to comment 11-1.

14-2 Comment noted.

14-3 Please see the response to comment 11-3.

14-4 Please see the response to comment 11-4.

Letter 15

Bureau of Land Management
Elko Field Office
1300 East Idaho St.
Elko, NV 89801

[illegible] MANAGEMENT
[illegible] OFFICE
2000 NOV 13 PM 2: 31

Attention:

KIRK LAIRD, SEIS COORDINATOR

Re:

MINE DEWATERING AFFECTS ON ALFALFA FARMERS

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So we would like to know whether any consideration is being given to farmers regarding the negative impact of continued mine dewatering, and what recourse do we have, if any?

Sincerely,

Leslie H. Baird
signature

11-12-00
date

Name: Leslie H. Brooks
Address: P.O. Box 520 Battle Mtn, NV. 89820
Phone: 775-761-7759

Responses to Letter 15

15-1 Please see the response to comment 11-1.

15-2 Comment noted.

15-3 Please see the response to comment 11-3.

15-4 Please see the response to comment 11-4.

Letter 16

Bureau of Land Management
Elko Field Office
1300 East Idaho St.
Elko, NV 89801

RECEIVED
BUREAU OF LAND MANAGEMENT
ELKO OFFICE
2000 NOV 13 PM 2:31

Attention:

KIRK LAIRD, SEIS COORDINATOR

Re:

MINE DEWATERING AFFECTS ON ALFALFA FARMERS

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So we would like to know whether any consideration is being given to farmers regarding the negative impact of continued mine dewatering, and what recourse do we have, if any?

Sincerely,

Max Lenaburg
signature

11-9-00
date

Name:	Max Lenaburg
Address:	HC 61 Box 60 Battle Mnt Nev 89820
Phone:	775-635-9234

Responses to Letter 16

16-1 Please see the response to comment 11-1.

16-2 Comment noted.

16-3 Please see the response to comment 11-3.

16-4 Please see the response to comment 11-4.

Letter 17

Bureau of Land Management
Elko Field Office
1300 East Idaho St.
Elko, NV 89801

MANAGEMENT
OFFICE
2000 NOV 13 PM 2:31

Attention:

KIRK LAIRD, SEIS COORDINATOR)
)
)

Re:

MINE DEWATERING AFFECTS ON ALFALFA FARMERS

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So we would like to know whether any consideration is being given to farmers regarding the negative impact of continued mine dewatering, and what recourse do we have, if any?

Sincerely,

Erik M. Taylor
signature

11-12-00
date

Name:	Erik Taylor
Address:	HC61 Box 20 Battle Mtn., NV 89820
Phone:	775-635-8608

Responses to Letter 17

17-1	Please see the response to comment 11-1.
17-2	Comment noted.
17-3	Please see the response to comment 11-3.
17-4	Please see the response to comment 11-4.

Letter 18

BATTLE MOUNTAIN BAND COUNCIL
37 MOUNTAIN VIEW DRIVE #C
BATTLE MOUNTAIN NV 89820
(775) 635-2004
FAX (775) 635-8016

November 14, 2000

Mrs. Helen Hankins
Bureau of Land Management
3900 East Idaho ST
Elko NV 89801

Subject: BETZE-POST PROJECT

Dear Ms. Hankins:

We received a copy of the Draft SEIS for the Betze Project. This is an important issue which will affect a large radius and will impact upon the Western Shoshone people into the future centuries.

18-1 The traditional areas of Rock Creek and Tosawihi will be affected by the method of dewatering. The cumulative effects will dry up the spring and creeks where our people currently plus prehistorically and historically pray and practice religious rituals. Under the earth, our ancestors still lie. We have practice our religion on these lands and the springs and other bodies of water are part of this religion. We have not relinquished our practices upon the coming of the White Man. The churches of the Newe people are not grounded to a certain place. We find it very difficult to pinpoint these areas out to Federal agencies because the confidentiality and respect issues are not treated as such.

With the impact of the springs and other bodies of water, whether on the surface or underneath the earth, will come the gradual genocide of the Western Shoshone people. Because our beliefs are connected with the well being of the earth, we have no choice but to protest these genocidal issues.

Therefore, when the water is lessened and mines are allowed to waste billions of gallons in one day, we must document our concerns and must protest the wanton waste of water. Of course, we are also aware that the Federal agencies feel this is "insignificant" but for us, this is of utmost significance!

Sincerely,

Bernice A. Lalo, M.Ed.
Tribal Environmental Coordinator

Responses to Letter 18

18-1 See the responses to comments 6-2, 7-1, and 8-2 regarding potential impacts to areas of concern to the Western Shoshone people.

Letter 19

United States Department of the Interior

U.S. FISH AND WILDLIFE SERVICE
911 N.E. Eleventh Avenue
Portland, Oregon 97232

IN REPLY REFER TO:
AES/HC

ELKO DIST
DM
DM
AN/NEPA
ENF
ON-REN
NEWAR

December 13, 2000

Memorandum

To: SEIS Project Manager, Bureau of Land Management
Elko Field Office, Elko, Nevada
(Attn: Kirk Laird)

From: Assistant Regional Director, Ecological Services
Region 1, Portland, Oregon

Subject: Review of SEIS Barrick Goldstrike Mines, Inc. - Betze Project
(EC 00/0040)

19-1 In response to your September 20, 2000, Memorandum, the U.S. Fish and Wildlife Service has reviewed the proposed SEIS for the Betze Project, Barrick Goldstrike Mines, Inc. Please refer any comments to Julie Concannon, Regional Environmental Specialist at (503) 231-2068.

We have no comment.

Responses to Letter 19

19-1 Comment noted.

APPENDIX A

BETZE SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT (SEIS) MITIGATION PLAN

INTRODUCTION

The BLM issued the Final Environmental Impact Statement ("EIS") for the Betze Project in 1991. The 1991 EIS included a description of environmental impacts projected to result from Barrick Goldstrike Mines Inc's ("Barrick") dewatering operations. In connection with the 1991 EIS and Record of Decision, Barrick provided mitigation for those impacts.

The BLM has now prepared a Supplemental Environmental Impact Statement ("SEIS") for the Betze Project. The SEIS provides a detailed analysis of the projected impacts of Barrick's expanded dewatering operations (compared to 1991) and the installation of a second pipeline for Barrick's water management system. The SEIS concluded that the second pipeline would not have any substantive effects

Therefore, the monitoring and mitigation proposed as a result of the analysis completed by the SEIS is related only to the expanded dewatering operations. Barrick has subsequently withdrawn the pipeline application.

The SEIS used actual pumping rates since 1991 and actual drawdowns to update the hydrogeologic model and the resulting future pumping projections. A purpose of the SEIS was to define appropriate mitigation measures for impacts resulting from the increased pumping rates and pumping volumes, in keeping with the Betze Record of Decision. The SEIS was prepared in conjunction with a Cumulative Impact Analysis (CIA) which identified the potential impacts of the cumulative dewatering from Barrick's Betze Project, Newmont's South Operations Project Area (SOPA), and Newmont's Leeville Project, all existing or proposed mining operations on the Carlin Trend.

This Mitigation Plan describes the mitigation that Barrick has agreed to undertake to fulfill the purpose of the SEIS with respect to impacts or potential impacts, whether direct, indirect or cumulative, described in the SEIS. Some of the mitigation, most notably the Willow Creek Plan (see section I.C. below) and the conveyance of the Rock Creek water right to the Nevada Division of Wildlife and BLM (see section VII below), are effectively "pre-mitigation" of potential impacts that may or may not occur.

SUMMARY TABLE OF POTENTIAL ADDITIONAL IMPACTS AND MITIGATION

Resource	Potential Additional Impacts of Dewatering	Mitigation
Riparian Habitat	Impacts may be of longer duration, but not expected to affect as many acres.	- The Willow Creek Plan, a program to achieve restoration of 635 acres of riparian habitat and associated uplands in the headwaters of Willow Creek.
Seeps and Springs	Duration of impacts may be extended, but fewer seeps and springs expected to be affected.	_ Improvement of 15 springs in cooperation with BLM and NDOW.
Antelope Creek Flows	Flows may be reduced in the lower perennial reaches.	- Additional monitoring.
Humboldt River Water Quality	Potential effects of naturally occurring constituents of discharged water on aquatic biota.	- $25,000 to USFWS for biota monitoring in each year in which discharge occurs.
Terrestrial Wildlife, including Sensitive Species.	Impacts are tied to spring and riparian impacts.	- The Willow Creek Plan will achieve riparian as well as upland benefits for terrestrial wildlife.
Sage Grouse	Potential Impacts to riparian areas.	- The Willow Creek Plan will enhance Sage Grouse nesting areas and nearby riparian habitat. - $50,000 fund for habitat enhancement projects.
Springsnails	Potential reduction to flow in springs on private land inhabited by a Prygulopsis gibba, a widespread species.	- $50,000 research grant to study springsnail relocation techniques.
Lahontan Cutthroat Trout	Impacts beyond those analyzed in the 1991 EIS and the 1994 Meikle EA and BO are not predicted.	- The Willow Creek Plan will result in the improvement of 20.5 miles of LCT habitat and restoration of former habitat.
Cultural Resources	There is a potential for reduction of the base flow of Rock Creek in the vicinity of the Rock Creek TCP.	- Conveyance of 1.5 cfs in-stream flow right to Nevada Division of Wildlife and BLM.
California Floater	The base flow in Rock Creek where the species has been identified may be diminished.	- Conveyance of 1.5 cfs in-stream flow right to Nevada Division of Wildlife and BLM.

RESOURCES OF CONCERN

I. Riparian Vegetation

A. Summary of Projected Impacts

The 1991 Betze EIS predicted impacts to 330 acres of riparian habitat. In connection with the 1991 Betze EIS and Record of Decision, Barrick provided mitigation for the projected impacts to riparian vegetation. Based on extensive monitoring data and updated and recalibrated hydrologic model projections, the SEIS disclosed that the Betze dewatering operations will affect fewer acres of riparian habit than expected by the 1991 EIS though the duration of the impacts may be extended. The SEIS projects that the direct impacts to riparian habitat will be only 150 acres, instead of the 330 acres previously projected, while the duration of the time period between the end of mining and recovery of the ground water table to a steady state will increase from an estimate of 100 years in 1991 to the current estimate of 230 years. The cumulative impact to riparian vegetation due to dewatering for the Betze Project, SOAPA, and Leeville Project is projected to be as much as 618 acres. Considering the direct impacts due to each mining project, the impact to riparian acreage attributable to Barrick dewatering is less than the impact forecast in 1991. However, the duration of the impact may be substantially longer.

B. Monitoring

Monitoring will consist of a continuation of the existing monitoring plan established by the 1991 EIS and expanded since then. As established by the 1991 EIS, monitoring will be conducted by Barrick until such monitoring is no longer considered necessary by regulatory authorities. After December 31, 2030, the costs of said monitoring will be paid for by the Long Term Monitoring Trust Fund established by Barrick.

C. Mitigation

Barrick is providing additional mitigation that will benefit riparian habitat. The drainage area upstream of the Willow Creek Reservoir is historically Lahontan Cutthroat Trout habitat. The perennial streams include Upper Willow Creek, Lewis Creek and Nelson Creek. The riparian and aquatic habitats along and in those creeks have been degraded by historic livestock grazing. Virtually the entire length of those creeks is on private property, most of which is owned by Barrick. This creates an excellent opportunity for Barrick and the BLM to engage in watershed restoration in the Willow Creek Reservoir watershed as off-site mitigation for several resources.

The Upper Willow Creek Habitat Enhancement Plan (the "Willow Creek Plan") has been developed through a cooperative effort between BLM, NDOW, and Barrick. The Willow Creek Plan encompasses three basic elements: (1) initial grazing elimination, followed by careful grazing management to enhance and preserve riparian areas as well as uplands; (2) criteria and associated monitoring to insure that grazing management promotes improvement and protection of riparian and stream habitat; (3) creation of a conservation easement on Barrick's private lands to enable BLM to assure that the Willow Creek Plan is carried out without regard to changes in land ownership.

Under the Willow Creek Plan, Barrick is providing additional riparian mitigation. Approximately 635 acres of degraded riparian habitat along approximately 20.5 miles of Lewis Creek, Nelson Creek and Willow Creek will be rested from grazing, allowed to restore itself through natural processes, and managed to maintain its enhanced quality. The Willow Creek Plan is attached as Appendix A.

II. Water Resources

A. Seeps and Springs.

1. Summary of Projected Impacts

The 1991 Betze EIS projected potential flow reductions in 111 seeps and springs. This SEIS projects that Betze dewatering might have direct impacts on only 70 springs, though the duration of impact is likely to be longer. Of those, 44 have a moderate-to-high likelihood of impact, 26 have a low likelihood of impact (DSEIS at pp. 3-98 to100). The DSEIS at p. 5-9 notes that the CIA identifies 182 springs that may be affected in the cumulative effects area.

2. Monitoring

Monitoring will consist of a continuation of the existing monitoring plan established by the 1991 EIS and expanded since then. As established by the 1991 EIS, monitoring will be conducted by Barrick until such monitoring is no longer considered necessary by regulatory authorities. After December 31, 2030, the costs of said monitoring will be paid for by the Long Term Monitoring Trust Fund established by Barrick.

3. Mitigation

Mitigation for the loss of these springs was provided for in the 1991 Betze ROD. However, over a three-year period following the issuance of the FSEIS, Barrick will improve up to fifteen springs by such means as are deemed appropriate on a site-specific basis. Such measures might include, but are not limited to, fencing, piping and installing water troughs away from the springheads to eliminate livestock trampling. The nature of the improvements and the springs to be improved will be determined by consultation among BLM, NDOW and Barrick.

B. Antelope Creek Flows

1. Summary of Projected Impacts

The SEIS, relying on the CIA and Newmont's hydrologic model, projects potential cumulative dewatering impacts in the form of temporary flow reduction in the lower end of the perennial reach of Antelope Creek. Such flow reductions would result in a decrease in riparian vegetation with indirect effects to other resources which depend on riparian vegetation. This portion of Antelope Creek is on private land owned by a third party.

2. Monitoring

In response to a public comment questioning the adequacy of surface monitoring on Antelope Creek, Barrick has installed an additional stream flow monitoring station in the perennial reach of Antelope Creek. The station is designated ANT-1a and is located between ANT-1 and the confluence of Antelope Creek and Squaw Creek. The approximate location of ANT-1a is shown in Fig. 1. Monitoring will be performed on the same schedule and for the same parameters as for ANT-1. The results of monitoring will be incorporated into reports submitted pursuant to the Boulder Valley Monitoring Plan.

3. Mitigation

Impacts to riparian vegetation would be mitigated under the Willow Creek Plan (see section I.C. above).

C. Humboldt River Water Quality

1. Summary of Projected Impacts

Barrick has not discharged water into the Humboldt River since February 1999. The USFWS has raised questions about the effect of naturally occurring constituents contained in the discharge on the Humboldt River and the Humboldt Sink. In its comments on the DSEIS, USFWS specifically requested that Barrick continue to support the USFWS Humboldt River Aquatic Biota Monitoring study.

2. Monitoring

As presented by the DSEIS at page 1-26 Barrick has collected water quality information and other data in cooperation with the US Fish and Wildlife Service, the Nevada Department of Conservation and Natural Resources, and the US Geological Survey. In addition Barrick has provided funding to the US Geological Survey for a study of the Humboldt River Basin. Barrick also cooperates with the US Fish and Wildlife Service in the collection of aquatic biota samples which are used as part of a monitoring program.

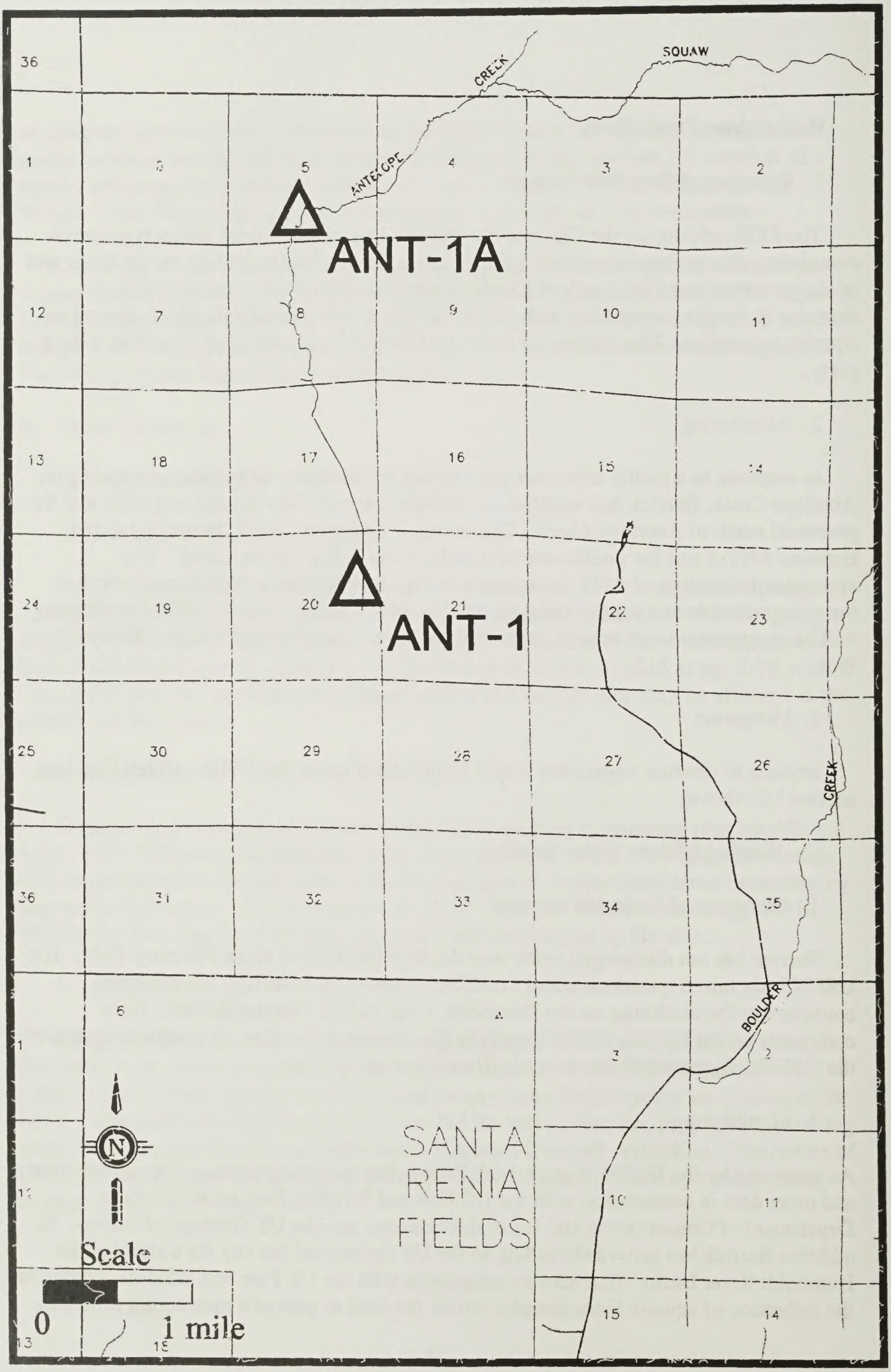

Figure 1 ANT-1A Location

2. Mitigation

In any year in which Barrick discharges water to the Humboldt River, Barrick will provide $25,000 to USFWS for its use in the Humboldt River Aquatic Biota monitoring study.

III. Terrestrial Wildlife

A. Summary of Projected Impacts

The potential impacts to terrestrial wildlife described in the SEIS are associated with spring and riparian impacts. See DSEIS at p.3-171to172; 5-22 to 23. As explained above, the acres of potential impacts to riparian vegetation and the number of potentially impacted springs are less than those analyzed and mitigated in connection with the 1991 EIS.

B. Monitoring

Additional monitoring will be conducted in accordance with the Willow Creek Plan (see section I.C.).

C. Mitigation

By enhancing and restoring 635 acres of riparian habitat, the Willow Creek Plan will also benefit terrestrial wildlife. The grazing management activities necessary to achieve the riparian enhancement will also result in improvement to approximately 12,000 acres of upland habitat used by terrestrial wildlife. One of the monitoring sites that will be evaluated under the Willow Creek Plan is upland habitat important to mule deer and other terrestrial wildlife species. In addition, Barrick's proposed spring enhancement (section II.A.) will benefit terrestrial wildlife.

IV. Sensitive Species (Terrestrial)

A. General

1. Summary of Projected Impacts

The SEIS identifies a variety of sensitive terrestrial species, some of which are known to occur in the study area and some of which only might occur, and accordingly are assumed to occur in the study area. See DSEIS at p.3-212-214 and 5-25&26. Impacts to such species are also associated with impacts to springs and riparian vegetation. Id.

2. Monitoring

No additional monitoring will be carried out under this mitigation plan. Both the BLM and the Nevada Division of Wildlife monitor wildlife populations and conditions.

3. Mitigation

Impacts to sensitive terrestrial species are based on impacts to springs and riparian habitat, therefore the Willow Creek Plan and spring enhancement program will serve as mitigation for any impacts to sensitive terrestrial species. The Willow Creek Plan will enhance and restore 635 additional acres of riparian habitat.

B. Sage Grouse

1. Summary of Impacts

The DSEIS indicates that to the extent dewatering impacts riparian vegetation, it might impact Sage Grouse (DSEIS at p. 3-213).

2. Monitoring

No additional monitoring will be carried out under this mitigation plan. Both the BLM and the Nevada Division of Wildlife monitor wildlife populations and conditions.

3. Mitigation

The Willow Creek Plan (section I.C.) will restore 635 acres of degraded riparian habitat. The uplands in the Enhancement Area are known to include Sage Grouse nesting areas. In fact, the monitoring site designated as Key Area Number 3 includes Sage Grouse nesting habitat. The Willow Creek Plan specifically provides for monitoring of improvements in that key area. By improving riparian habitat and known Sage Grouse nesting habitat, the Willow Creek Plan will provide benefits to Sage Grouse.

In addition Barrick will establish a $50,000 fund to be used by the BLM on Sage Grouse habitat enhancement projects.

V. Sensitive and Candidate Species (Aquatic)

A. Summary of Projected Impacts

As discussed in the FSEIS at pp (_____), no direct impacts to sensitive aquatic species are projected. There is a possibility that dewatering may cause a reduction in flow in lower Rock Creek which may affect the California floater, a Nevada BLM sensitive species.

B. Monitoring

No additional monitoring is proposed. The Boulder Valley Monitoring Plan monitors stream flow in streams and springs in the area of potential impact. The BLM and the Nevada Division of Wildlife conduct surveys of fish and wildlife populations and habitat conditions.

C. Mitigation

Barrick will contribute up to $50,000 to support research, as directed by a cooperative working group comprised of representatives of BLM, NDOW, USFWS, Desert Research Institute and Barrick. The research will be directed at identifying methods for springsnail relocation. Such methods could be a valuable mitigation tool in the future. In addition, Barrick will provide manpower to assist Desert Research Institute in the development of a computerized springsnail database.

The conveyance of a 1.5 cfs water right in Rock Creek, as described in section VII. C., will also provide mitigation for the California floater population in lower Rock Creek.

VI. Lahontan Cutthroat Trout

A. Summary of Projected Impacts

As explained in greater detail in the DSEIS (pp. 3-89 & 3-101) and the FSEIS (pp____), continued monitoring tends to confirm earlier conclusions that Barrick's dewatering activities are unlikely to affect LCT habitat along the eastern slope of the Tuscarora Mountains. The modeling projects that Barrick's drawdown, standing alone, will not affect perennial streams inhabited by LCT. However, there is a possibility that the cumulative impacts of dewatering from the three mining projects, Betze, SOAPA, and Leeville could result in a temporary reduction in flow in those portions of Jack, Little Jack, Coyote, and Beaver Creeks below 6,000 ft in elevation.

B. Monitoring

Barrick will provide additional piezometers to measure changes in water level as described in this section. If the cone of depression advances towards the LCT streams which have been identified by the hydrologic modeling as potentially impacted, Jack, Little Jack, Coyote, and Beaver, this additional monitoring will help identify the extent of such impacts before they occur and provide sufficient advance warning for an effective response.

NA-37a and NA-37b are existing piezometers located to the northeast of the Betze pit near the crest of the Tuscarora Mountains. They are "nested" piezometers at a site located between the mine and the LCT streams of the Tuscarora Mountains. See figure 2. To date, the water levels in the screened intervals of NA 37a and b have not changed. NA-37a is screened from 181 feet below collar to 239 feet below collar, or an elevation of 6,656'amsl to 6598' amsl. NA-37b is screened from 743 feet below collar to 803 feet below collar, or an elevation of 6,096' amsl to 6,036' amsl. In the event that the water level in NA-37a or NA-37b drops 10 feet below its annual average elevation, Barrick will drill a replacement piezometer (the "First Step-Out Piezometer") to monitor the same hydrologic units, generally further to the northeast, at a location agreed in consultation between BLM and Barrick. BLM and Barrick will consider the cost of drilling, access, landownership and additional surface disturbance in establishing the new location.

In the event the water levels in the First Step-Out Piezometer drop more than 10 feet from their average annual levels (as determined over the first five years of monitoring - or sooner if deemed prudent by the BLM) Barrick will install another step-out piezometer in accordance with the procedures outlined above (the "Second Step-Out Piezometer"). If the Second Step-Out Piezometer shows a change of more than 10 feet (determined in the same manner as for the First Step-Out Piezometer) Barrick will drill a third step-out piezometer in accordance with the procedures outlined above.

NA-51s is an existing piezometer located to the west of the Betze pit. It lies between the measured drawdown from dewatering operations and Rock Creek. See figure 3. To date water levels in NA-51s have shown no impact from dewatering. NA-51s is screened from 180 feet below collar to 220 feet below collar, or an elevation of 4778' amsl to 4738' amsl. In the event water levels in NA-51s show more than 10 feet of drawdown from the annual average water level in NA-51s, Barrick will drill another piezometer closer to Rock Creek at a location agreed in consultation between Barrick and the BLM.

C. Mitigation

Barrick has agreed to LCT habitat enhancement (section I.C.) and additional groundwater monitoring as described above. The Willow Creek Plan will enhance LCT habitat and thereby increase LCT numbers. The grazing restrictions provided in the plan are intended to allow approximately 20.5 miles of stream to rehabilitate itself through natural processes. The improvement in habitat will support LCT. Grazing management methods such as those to be employed under the Willow Creek Plan have proven successful in increasing LCT numbers. Newmont's Maggie Creek Watershed Restoration Project is a good example of such success.

The Willow Creek Plan establishes criteria to assure the success of the grazing management. Those criteria include: (1)Riparian Condition Class (a combination of bank stability and cover); (2) stream width-to-depth ratio and (3) Proper Functioning Condition. The Willow Creek Plan prescribes monitoring designed to ensure that these criteria are met.

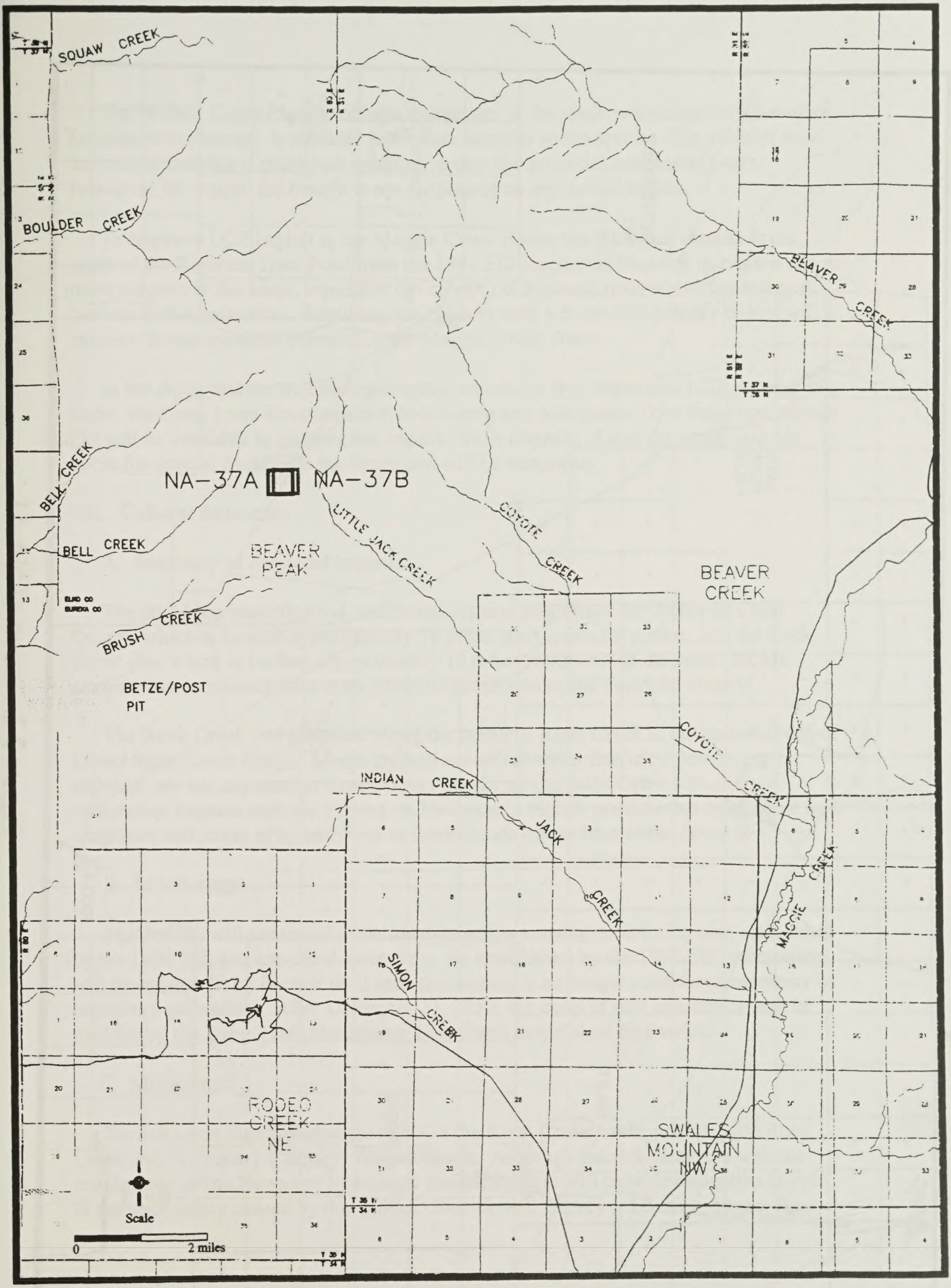

Figure 2 Location of NA-37A & NA-37B

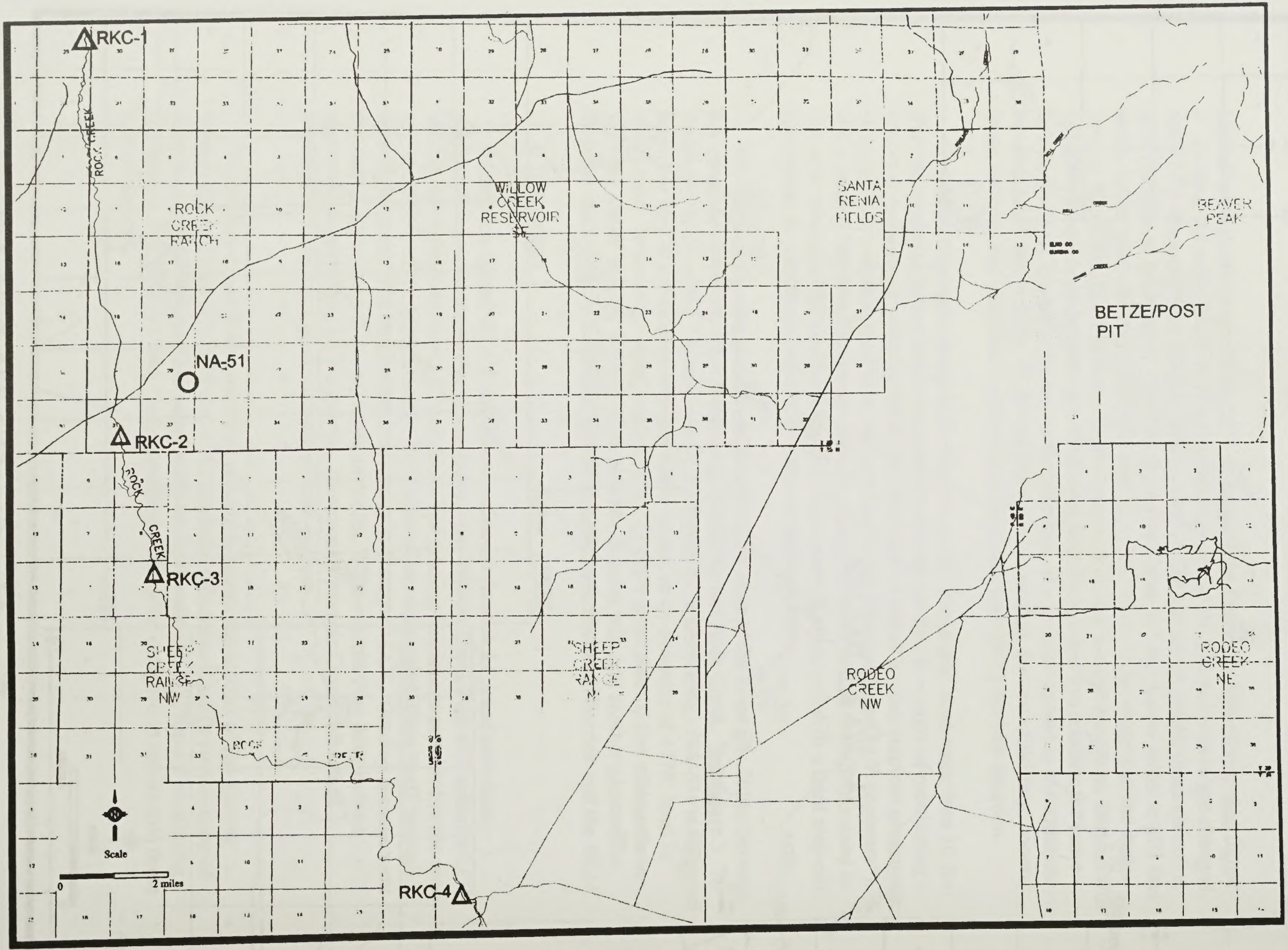

Figure 3 Location of NA-51

The Willow Creek Plan, as off-site mitigation, is the preferred mitigation alternative for important reasons. It provides immediate benefits to the species. The value of such immediate benefits is much less speculative than the potential benefits of future measures. Moreover, the benefit is not contingent on any actual impact.

To improve LCT habitat in the Maggie Creek Basin, the BLM has elected to use some of the Riparian Trust Fund from the 1991 EIS Record of Decision to replace one or more culverts in the basin, especially the culvert on Beaver Creek, which are acting as barriers to fish migration. Replacing the culverts with a more fish-friendly design will enhance metapopulation potential in the Maggie Creek Basin.

In the event that the monitoring program concludes that impacts to LCT streams will occur, the Long Term Environmental Monitoring and Mitigation Trust Fund (see section IX) will be available to mitigate the impact. Such impacts, if they do occur, will not occur for several decades in the future and will be temporary.

VII. Cultural Resources

A. Summary of Projected Impacts

The BLM has identified two traditional cultural properties: the Tosawihi Chert Quarry, which is located approximately 18 miles northwest of the mine, and the Rock Creek site, which is located approximately 19 miles southwest of the mine. BLMs analysis has concluded there is no potential for effects to the Tosawihi Quarry.

The Rock Creek site is located along the banks of Rock Creek at the upstream end of Lower Rock Creek Gorge. Model projections indicate that Barrick's dewatering activities are not expected to have a direct impact on the Rock Creek site. The cumulative impacts analysis, relying on Newmont's model, predicts that there could be a temporary reduction of up to 1.5 cfs in Rock Creek's base flow in the future.

B. Monitoring

Monitoring will consist of a continuation of the existing monitoring plan established by the 1991 EIS and expanded since then. As established by the 1991 EIS, monitoring will be conducted by Barrick until such monitoring is no longer considered necessary by regulatory authorities. After December 31, 2030, the costs of said monitoring will be paid for by the Long Term Monitoring Trust Fund established by Barrick.

C. Mitigation

Barrick owns significant water rights in the Rock Creek basin, primarily on Rock Creek and its primary tributary, Willow Creek. Although Barrick disagrees with the conclusions of the Newmont hydrologic model, Barrick will provide mitigation in light of the uncertainty caused by that model. Barrick will convey a 1.5 cfs in-stream flow right to the Nevada Division of Wildlife and BLM for wildlife purposes. The designated place of use of the water right will be from RCK-1 to RCK-4 (see figure 4). This approach provides immediate and certain benefits to the Rock Creek traditional cultural property site. Moreover, such conveyance is permanent while the projected impact is temporary. Finally, dedication of the water right is easier to measure and more certain than other mitigation strategies.

VIII. Funding for BLM Monitoring

As outlined above, Barrick is providing a variety of mitigation measures designed to enhance biological resource values. BLM's participation in the implementation of mitigation and establishment of monitoring programs will require the time of BLM staff and divert staff from other programs. To reduce the impact on BLM human resources, Barrick will provide funding to be used toward a BLM staff position. Barrick will provide the BLM with $30,000 per year, beginning in 2002 and continuing until the year 2011 to be used to pay a portion of a BLM staff biologist position.

IX. Trust Funds

In connection with the 1991 EIS, Barrick established two long-term trust funds: the Long-Term Monitoring Fund and The Long-Term Environmental Monitoring and Mitigation Fund (LTEMMF). Both funds are held in trust for the benefit of the BLM by the Bank of America, as trustee, under the Barrick Goldstrike Mines Inc. Irrevocable Trust.

The Long-Term Monitoring Fund was established to fund monitoring that would occur after the year 2030. Barrick may draw on the fund to pay the costs of monitoring. If, however, Barrick is no longer able to conduct the monitoring, the fund is available for the BLM to pay for the monitoring. The initial balance of the Long-Term Monitoring Fund was $250,000. As of March 30, 2001, the balance of the Long-Term Monitoring Fund was $447,297.45. Since the Long-Term Fund was established, it has grown at a rate of 6.14% annually. Because of the expanded dewatering, the time frame for the cone of depression to reach its maximum extent has increased from about 30 years to around 100 years. Monitoring will probably not be necessary after the cone of depression begins to contract towards its eventual steady-state position.

Barrick believes the Long-Term Monitoring Fund, as it exists, is more than adequate to cover the annual costs of monitoring, estimated to be $36,000 per year in 2001 dollars. Nevertheless, to provide even more certainty that adequate funding for monitoring will exist, Barrick will deposit an additional $300,000 in the Long-Term Monitoring Fund.

If in 2080, or anytime thereafter, BLM determines that the Long-Term Monitoring Trust Fund, or any part of it, is not necessary, such funds may be transferred to the LTEMMF. The LTEMMF was established to be used for the review, monitoring and

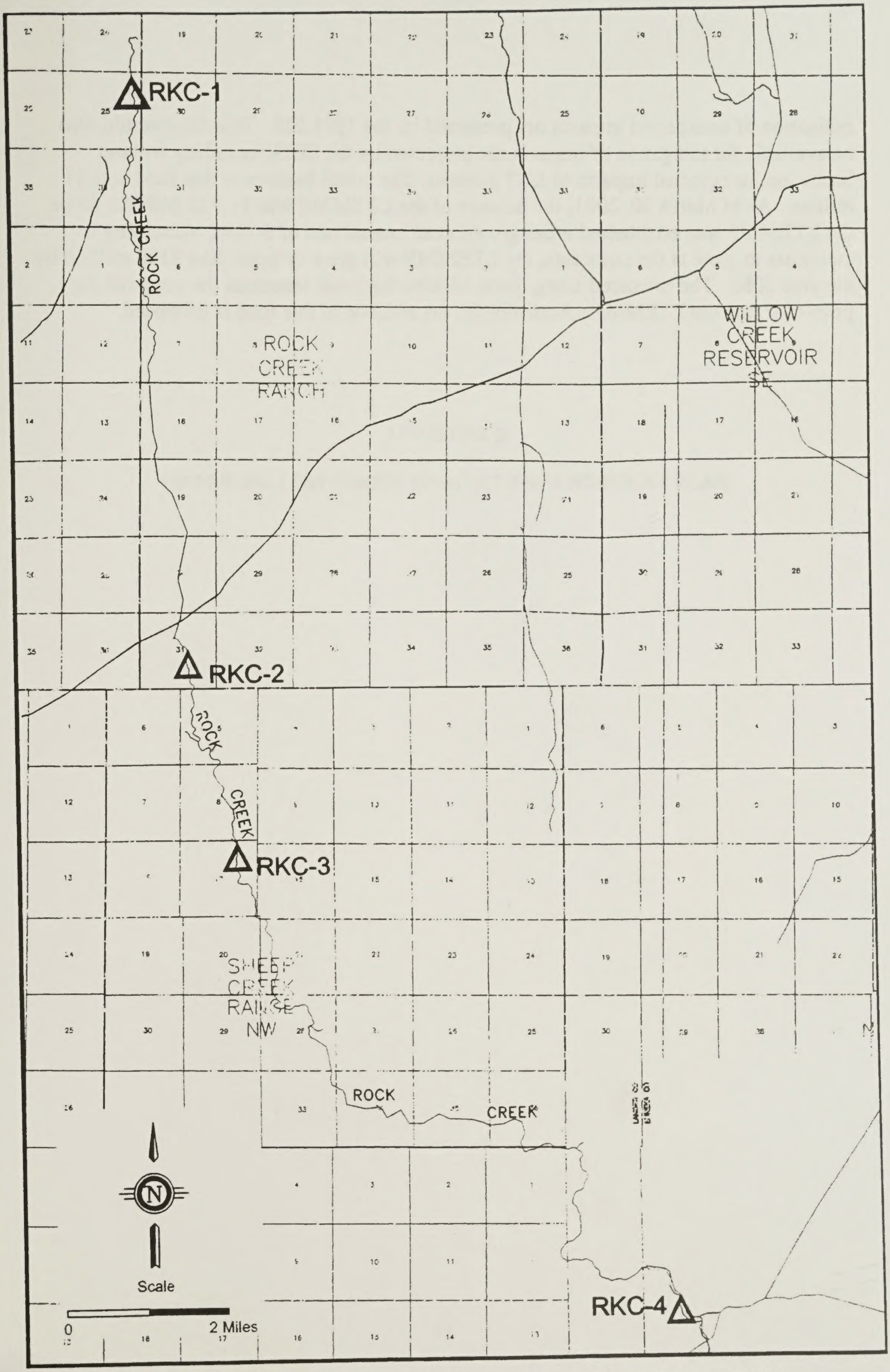

Figure 4 Location Of Place Of Use of Rock Creek Water Right

mitigation of unexpected impacts not predicted by the 1991 EIS. This fund would also be available for mitigation of impacts not projected by the SEIS, including without limitation, unexpected impacts to LCT streams. The initial balance in this fund was $1 million. As of March 30, 2001, the balance of the LTEMMF was $1,722,869.08. Since the LTEMMF was established it has grown at an annual rate of 5.73%. Assuming it continues to grow at the same rate, the LTEMMF will grow to more than $140 million by the year 2080. The enhanced Long-Term Monitoring Fund increases the potential for pour-over into the LTEMMF. Accordingly, no addition to this fund is proposed.

APPENDIX B

UPPER WILLOW CREEK HABITAT ENHANCEMENT PLAN

UPPER WILLOW CREEK HABITAT ENHANCEMENT PLAN

Introduction and Purpose

The purpose of this Upper Willow Creek Habitat Enhancement Plan (Plan) is to improve aquatic and riparian environments while providing mitigation for direct environmental impacts and potential cumulative environmental impacts analyzed in the Betze Project Supplemental Environmental Impact Statement (the "SEIS"). The habitat enhancement measures described in this Plan will take place outside of the area of any projected or potential environmental impacts analyzed in the SEIS. Those measures will also provide environmental benefits before certain of the potential impacts analyzed in the SEIS would occur and whether such impacts occur or not.

A. Description of Upper Willow Creek Enhancement Area.

The Upper Willow Creek Habitat Enhancement Area ("Enhancement Area") is generally described as the drainage area upstream of the Willow Creek Reservoir and within the Squaw Valley Allotment. The Enhancement Area is depicted in Figure 1. The Enhancement Area encompasses all of Lewis Creek and Nelson Creek, the Nelson Field, and the reach of Willow Creek between Willow Creek Reservoir and the eastern boundary of the Squaw Valley Allotment ("Upper Willow Creek"). The Enhancement Area encompasses approximately 12,300 acres. It includes approximately 20.5 miles of streams that are inhabited by LCT, or that might become inhabited by LCT as conditions improve, and associated riparian zones. The uplands within the Enhancement Area include a variety of habitats for avian and terrestrial wildlife species, including sage grouse and mule deer. The majority of the private lands within the Enhancement Area are owned by Barrick. The Enhancement Area is outside, but reasonably nearby, the area of any potential impacts from dewatering activities at the Goldstrike Mine.

B. Grazing Management

Implementation of alternate grazing practices in the Enhancement Area will occur in three phases. Phase One will occur from the present until August 1, 2003. Phase 2 will occur from August 1, 2003 until the Stream and Riparian Criteria (as defined below) are achieved. Phase 3 will occur after the Stream and Riparian Criteria are achieved.

Phase 1. From the present until August 1, 2003, grazing will be actively managed to minimize impacts within the Enhancement Area. From the Willow Creek Reservoir, Cattle will be trailed along the ridges toward the northeast into Lower Nelson Field, instead of being trailed along the riparian zone of Willow Creek. Cattle will be kept in Lower Nelson Field and then be moved to Upper Nelson Field for a combined maximum of two weeks. Cattle will be out of Upper Nelson Field by no later than August 1. Salt blocks will be placed away from springs and streams in both Upper and Lower Nelson Fields to encourage cattle to stay out of riparian areas. Gates in the fence on the ridge between Toe Jam Creek and Lewis Creek will be kept closed to prevent cattle ranging in the Upper Rock Creek and Toe Jam Creek area from drifting into the Enhancement Area. Barrick, or its lessee, will remove any stray cattle drifting into the Upper Willow Creek drainage area after August 1st.

The BLM advises that new fencing might result in increased sage grouse mortality. Accordingly, with the exception of the wooden rail fence to be built in Key Area No. 4, described below, no new livestock fences will be constructed in the Enhancement Area or along its boundaries unless active herding practices and existing fences prove to be inadequate to preclude livestock drift into the Enhancement Area. Before any new livestock fences are constructed, Barrick would confer with BLM on the extent and type of construction of new fences.

Phase 2. During Phase 2, the Enhancement Area will be completely rested from livestock grazing. Phase 2 will continue until the Stream and Riparian Criteria in the Enhancement Area are met.

Once the Stream and Riparian Criteria have been met in the Enhancement Area, the monitoring program will be modified in consultation with the BLM to develop a reduced "maintenance" stream and riparian monitoring program (the "Phase III Monitoring Program"). The purpose of Phase III monitoring is to demonstrate that the Stream and Riparian Criteria are being maintained.

Phase 3. After the Stream and Riparian Criteria in the Enhancement area have been achieved and the Phase III Monitoring has been implemented, grazing may resume in the Enhancement Area under the following conditions:

1. A carrying capacity would be established for the Enhancement Area in animal unit months (AUMs) in consultation among BLM and Barrick.
2. The Enhancement Area could be used in either spring or fall season but not both seasons in the same year.

a). Spring use period would be prior to July 1st. No flexibility in off-date would be allowed.

b). Fall use period would be after September 16th. No flexibility in the on-date would be allowed.

3. The Enhancement Area shall be rested following any year of grazing use.
4. The following conditions would be met after removal of livestock:
    - a). A herbaceous 4" stubble height would be left.
    - b). Woody utilization would not exceed:
        - 20% on willows and/or
        - 10% on aspen.
    - c). Streambank trampling would not exceed 10%.

5. If monitoring shows that the ranching operation was found in non-compliance of the above resource criteria and restrictions (numbers of livestock, season of use, herbaceous and woody plant utilization criteria and streambank trampling criteria) the following terms and conditions would be implemented:

a). The Enhancement Area would receive two (2) consecutive years of rest; and

b). Barrick would take the necessary actions to assure that the herbaceous and woody plant utilization criteria and streambank trampling criteria identified above would be met in the future. Actions would include the reduction in season of use or reduction in numbers of livestock or a combination of both of these strategies.

C. Stream and Riparian Monitoring.

The Stream and Riparian Criteria are the goals desired to be achieved by this Plan. Stream and Riparian monitoring will take place on Lewis Creek, Nelson Creek and Upper Willow Creek during low flow or base flow conditions. The stream and riparian monitoring program will measure the parameters that make up the Stream and Riparian Criteria as well as parameters that are informational. Achievement of the Stream and Riparian Criteria will also reflect improvements in upland habitat conditions that are attendant to achieving improvements in stream conditions. Monitoring of upland habitat will allow for a better understanding of the correlation between upland improvements and aquatic improvements.

Stream and Riparian Criteria are described in narrative detail below. They are summarized as follows:

Lewis, Nelson and Upper Willow Creek

Habitat Parameters	Criteria
Riparian Condition Class (percent optimum)	70% (Lewis and Nelson) 65% (Upper Willow Creek)
Stream Width/Depth Ratio	15:1 or a 30% reduction from baseline, whichever is achieved first.
Proper Functioning Condition	PCF per BLM Manual TR 1737-15 (1998)

1. Stream and Riparian Criteria Monitoring.

The Stream and Riparian Criteria for the Enhancement Area address (1) riparian condition class (a combination of bank stability and bank cover), (2) stream width-to-depth ratio and (3) Proper Functioning Condition.

a) Riparian Condition Class

Bank cover and bank stability will be monitored as specified in BLM Manual Handbook 6720-1, Phase III Inventory, Elko District 2001 draft ("BLM 2001"). Bank cover and bank stability will be combined to determine the riparian condition class. The standards to be met are a minimum of 70 percent of optimum for Lewis and Nelson Creeks and a minimum of 65% of optimum for Upper Willow Creek.

b) Stream Width-to-Depth Ratio

The ratio of stream width-to-depth will be determined as specified in BLM 2001 At each depth transect, the water depth will be recorded to the nearest .05 feet at ¼, ½ and ¾ of the distance across the stream. Average depth will be based on the total of the depth of the depth measurements divided by four, if the shorewater depths are zero, or by three, if one or both shorewater depths are greater than zero (Platt et al 1983; USFS 1990). The wetted stream width will also be measured along each depth transect. At least five width depth transects will be measured at each stream monitoring station. The standards to be met and maintained are either a maximum of 15:1, or a 30 percent reduction from the baseline monitoring, whichever is achieved first. The stream width-to-depth ratio is not applicable to stream segments or reaches influenced by beaver activity.

c) Proper Functioning Condition

The standard to be met is Proper Functioning Condition for Lewis, Nelson and Upper Willow Creeks. Proper functioning condition will assessed according to BLM Manual TR 1737-15 (1998, A User Guide to Assessing Proper Functioning Condition and the Supporting Science for Lotic Areas).

2. Informational Monitoring

In addition to stream and riparian criteria, informational monitoring will be used to evaluate effectiveness of the plan.

a. Riparian Zone Width

The Riparian Zone width will be monitored as specified in BLM 2001.

b. Other Riparian Vegetation Parameters

Vegetation cross-section composition, greenline composition, and woody species regeneration will be monitored using procedures described in Winward (2000).

c. Temperature

Four thermographs will be installed; one in Lewis Creek, one in Nelson Creek, one below the confluence of Lewis and Nelson Creeks and one in Upper Willow Creek above the inlet to the Willow Creek Reservoir. The thermographs will be calibrated and set to record temperature readings every two hours and will run throughout the year. It is recognized that thermographs occasionally malfunction, or are damaged or washed away, Barrick will check the thermographs three times annually, report the data available and replace malfunctioning, damaged or lost thermographs.

d. Photography

Each monitoring station will be annually photographed looking upstream, downstream, and across the stream. Photography will be conducted annually through the start of Phase II and every three years thereafter.

e. Vegetation Overhang

Vegetation overhang will be monitored as specified in BLM 2001.

f. Pool Quality

Pool Quality will be monitored as specified in BLM 2001.

g. Grazing Impacts.

During years that grazing occurs on the Enhancement Area, grazing impacts will be monitored by reference to herbaceous plant stubble height, streambank trampling and woody plant utilization.

i. Herbaceous Plant Stubble Height

Using the methodology described in Interagency Technical References 1996 average stubble height of herbaceous riparian vegetation will be measured and recorded along transects to be established at the monitoring sites. Transects will be established parallel to the stream channel in the active flood plain or "flood prone area" (as defined by Rosgen 1996). In general, the transects will be located within five feet of the shoreline (bankful channel edge) as described by Platts (1990). A minimum of 20 measurements will be recorded for each transect.

ii. Streambank Trampling.

Streambank trampling will be determined by measuring the percent of streambank trampled or compacted by livestock along two one-hundred foot transects. The transects will be established at each of the monitoring sites for the right and left streambanks along the bankful channel line (as defined by Rosgen 1996).

The number of feet of streambank showing recent (current growing season) evidence of trampling, bank shearing, or compaction from livestock will be recorded along each transect. Streambanks inaccessible to livestock, including banks protected by rock, logs or other features will be included in the measurements.

iii. Woody Riparian Plant Utilization.

Estimates of utilization of the current years growth of woody riparian vegetation by livestock will be made based on comparisons to ungrazed plants at transects established at the monitoring sites using the key forage method. Key Forage Method – Nevada Range Studies Task Group 1984. Only those woody riparian plants (typically aspen and willow) that are available to livestock and located in or adjacent to the active flood plain will be sampled.

3. Frequency, Location and Baseline for Stream and Water Quality Criteria Monitoring and Informational Monitoring.

Monitoring Type	Location	Baseline*	Survey Frequency
Riparian Condition Class. Stream Width-to-depth. Riparian Zone Width. Vegetative Overhang. Pool Quality.	Survey points NS1, NS3-5, LS1, LS2, WS1-8 described in Appendix A and depicted in Figure 1.	Establish baseline during Summer 2002.	2003, 3 to 5 year intervals thereafter.
Grazing Impacts	Survey points BGMI 5,6,7 and 9 described in appendix A and depicted in Figure 1	Establish transects in Summer 2002	In the years the enhancement area is grazed.
Photo Points	Survey points NS1, NS3-5, LS1, LS2, WS1-8 described in Appendix A and depicted in Figure 1.	Re-established by 2002 Photos.	Annually for first five years, every third year thereafter.
Proper Functioning Condition.	Lewis, Nelson and Upper Willow Creeks	Establish baseline during Summer 2002.	2003, 3 to 5 year intervals thereafter.

Thermal Monitoring with Thermographs (continued on next page.)	Lewis Creek (BGMI 5), Nelson Creek (BGMI 6), below the confluence of Lewis Creek and Nelson Creek (BGMI 7) , Upper Willow Creek above reservoir inlet (BGMI 9).	Establish baseline during Summer 2002.	Program will be established in Summer of 2001 and will continue annually for ten years. Program will continue after ten years only if and only to the extent additional data is useful.

*Data developed by Cedar Creek Associates during the Summer of 2001 will be evaluated by BLM and may be used in establishment of baseline.

D. Uplands Monitoring.

Although this plan does not establish specific criteria for Uplands, it does establish an uplands monitoring program for informational purposes. Wildlife habitat conditions within the Enhancement Area will be monitored at four different representative "Key Areas." The Key Areas will be established in coordination between NDOW, BLM and Barrick during the Summer of 2001. The important vegetation characteristics differ for each key area and accordingly different monitoring parameters differ for each key area.

1. Key Area Number 1. Key Area No.1 will be established in Lower Nelson Field (See Figure 1 for the location of Lower Nelson Field.). The purpose of this key area will be to monitor perennial grass and browse species condition. The monitoring parameters for the Lower Nelson Field Key Area No. 1 shall be:

• Perennial Grasses	percent cover
• Perennial Forbes	percent cover
• Shrubs	percent cover

- Age and form class of low sagebrush as measured by Cole Browse Method

- % Canopy cover

2. Key Area Number 2. Key Area No. 2 will be established in Upper Nelson Field. (See Figure 1 for the location of Upper Nelson Field.). The purpose of this key area will be to monitor perennial grass and browse species conditions. The monitoring parameters for the Upper Nelson Field Key Area No. 2 shall be:

- Perennial Grasses percent cover
- Perennial Forbes percent cover
- Shrubs percent cover
- Age and form class of low sagebrush as measured by Cole Browse Method

3. Key Area Number 3. Key Area No. 3 will be established in the vicinity of Lewis Creek and the Willow Creek Ridge (See Figure 1 for the approximate location of Key Area No. 3). The purpose of this key area will be to monitor the condition of Mule Deer transitional habitat and Sage Grouse nesting habitat. The monitoring parameters for Key Area No. 3 shall be:

- Age and form class for bitterbrush and serviceberry.
- Age and form class of low sagebrush as measured by Cole Browse Method

4. Key Area Number 4. Key Area No. 4 will be established in and around an existing aspen stand in the Enhancement Area. A portion of the key area will be fenced using wood split rail type fencing to inhibit livestock but not wildlife access and the remainder will be left outside of the split-rail fence enclosure. The purpose of this key area is to measure improvement to aspen stands when livestock are excluded. The monitoring parameter shall be the number of single stemmed saplings per acre. Saplings are defined as single-stemmed aspen that are at least 4.9 feet in height and less than 3.9 inches in diameter at the breast level (4.5 feet above ground level).

E. Other Considerations.

1. Failure to achieve Stream and Riparian Criteria. If the Stream and Riparian Criteria have not been achieved after ten years of rest, the Stream and Riparian Criteria will be deemed to have been established at too high of level. Barrick, NDOW and BLM will thereafter confer to re-establish more appropriate criteria to replace the Stream and Riparian Criteria.

2. Wild Horses. Wild horses are known to intermittently range in the Enhancement Area. If monitoring and observation demonstrates wild horses are impairing the Enhancement Area from achieving the Stream and Riparian Criteria, BLM, NDOW and Barrick shall confer to determine the appropriate response, which may include, without limitation, revising the Stream and Riparian Criteria or removing the wild horses. Barrick, however, shall not be responsible to exclude or remove wild horses from the Enhancement Area.

3. Acts of God. Fire, disease, insect infestations or other events beyond the control of Barrick (collectively "Acts of God") may affect the Enhancement Area. In the event Acts of God prevent the achievement of Stream and Riparian Criteria, Barrick shall be under no obligation to offer replacement area for the Enhancement Area or to undertake affirmative measures to restore the Enhancement Area. Barrick's sole obligation in the event of an Act of God shall be to rest the Enhancement Area from livestock grazing and monitor in accordance with this plan.

4. Changes in Land Use. In the event Barrick, or any successor, changes land use within the Enhancement Area from grazing to another use that renders Barrick unable to achieve the Stream and Riparian Criteria (including without limitation, road construction or mining), Barrick will confer with NDOW and BLM and implement habitat enhancement at an alternative location prior to such land use.

Literature Cited.

Bureau of Land Management (BLM). 2002. Elko BLM Revised Handbook 6720-1. Level III Inventory. Elko Field Office, BLM, Elko, Nevada.

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Nevada Range Studies Task Group, 1984. Nevada Rangeland Monitoring Handbook. Soil Conservation Service, Forest Service. Platts, William S. 1990. Managing fisheries And wildlife on rangelands grazed by livestock. Reference Document for Biologists Prepared for Nevada Division of Wildlife, Reno, Nevada.

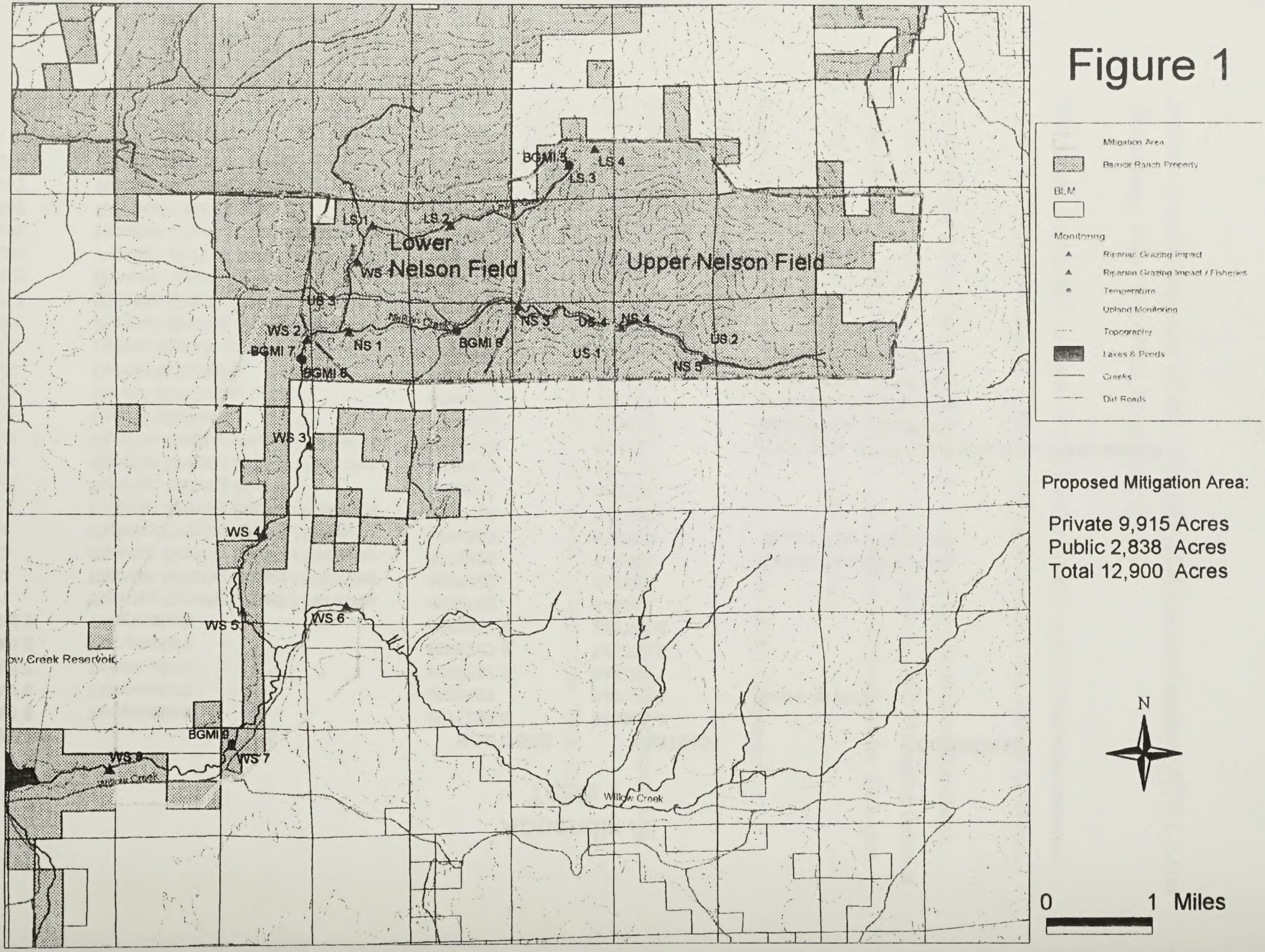
Rosgen, David. 1996. Applied river morphology. Printed Media Companies Minneapolis, Minnesota.

Winward, Alma H. 2000. Monitoring the vegetation resources in riparian areas. U.S. Dept Agriculture, Forest Service, Rock Mountain Research Station Gen. Tech. Rept. RMS-GTR-47.

Appendix A
Table 1

NAME	TYPE	NORTHING	EASTING	COMMENTS
BGMI 5	Temperature	4571735.0	549905.9	
BGMI 6	Temperature	4569163	548178.6	Same as NS2
BGMI 7	Temperature	4568737.5	545762.1	
BGMI 8	Temperature	4568717.5	545785.6	
BGMI 9	Temperature	4562914.5	544743.8	
LS 1	Riparian Grazing Impact / Fisheries	4569182	546447	
LS 2	Riparian Grazing Impact / Fisheries	4570802	548069	
LS 3	Riparian Grazing Impact / Fisheries	4571725	549896	Scaled from USGS Map
LS 4	Riparian Grazing Impact / Fisheries	4571983	550300	Scaled from USGS Map
NS 1	Riparian Grazing Impact / Fisheries	4569146	546506	
NS 3	Riparian Grazing Impact	4569553	549134	
NS 4	Riparian Grazing Impact / Fisheries	4569231	550713	
NS 5	Riparian Grazing Impact / Fisheries	4568736	552031	GPS Pt. Is 100 Ft. Upstream of 1st Cross Section
US 1	Upland Monitoring	4568994	550410	Scaled from USGS Map
US 2	Upland Monitoring	4568899	552067	Scaled from USGS Map
US 3	Upland Monitoring	4569515	546341	Scaled from USGS Map
US 4	Upland Monitoring	4569208	550557	Scaled from USGS Map
WS 1	Riparian Grazing Impact / Fisheries	4570223	546627	
WS 2	Riparian Grazing Impact / Fisheries	4569036	545867	
WS 3	Riparian Grazing Impact / Fisheries	4567422	545916	
WS 4	Riparian Grazing Impact / Fisheries	4566088	545210	
WS 5	Riparian Grazing Impact / Fisheries	4564920	544896	
WS 6	Riparian Grazing Impact	4564998	546493	
WS 7	Riparian Grazing Impact	4562892	544738	
WS 8	Riparian Grazing Impact	4562542	542890	

Figure 1



Proposed Mitigation Area:

Private 9,915 Acres
Public 2,838 Acres
Total 12,900 Acres

APPENDIX C

U.S. FISH AND WILDLIFE SERVICE CONCURRENCE MEMORANDUM

United States Department of the Interior

FISH AND WILDLIFE SERVICE

NEVADA FISH AND WILDLIFE OFFICE
1340 FINANCIAL BOULEVARD, SUITE 234
RENO, NEVADA 89502-7147

ELKO DISTRICT		
DM		
ADM		
PLAN/NEPA		
LAW ENF		
NON-REN	✓	✓
RENEWABLE		
S.S.		
FIRE		
REHAB		
CF CODE		
X=ACTION		

July 15, 2002
File No. 1-5-02-I-216

Memorandum

To: Assistant Field Manager, Nonrenewable Resources, Bureau of Land Management Elko, Nevada

From: Field Supervisor, Nevada Fish and Wildlife Office, Reno, Nevada

Subject: Informal Consultation Regarding the Bureau of Land Management's (BLM) Approval of the Continuation of Barrick's Goldstrike Mine Inc.'s (Barrick) Betze Project, Elko County, Nevada

This memorandum responds to your request dated May 6, 2002, for our concurrence to your determination that the approval of the continuation of Barrick's Betze Project would not adversely affect the threatened Lahontan cutthroat trout, *(Oncorhynchus clarki henshawi)* (LCT) or the threatened bald eagle, (*Haliaeetus leucocephalus*). This material was submitted to us for informal consultation pursuant to section 7 of the Endangered Species Act (Act) of 1973, as amended (16 USC 1531 et seq.). A description of the consultation history is summarized below.

On March 7, 2002, we received your March 2002 draft biological assessment/evaluation (BA/EV) for Barrick's proposed Betze Project, Elko County, Nevada. Your draft BA/EV included a determination that the approval of the continuation of the Betze Project would have no effect on LCT or bald eagles. The Service met with BLM and representatives from Barrick on March 15, 2002, to further discuss the Betze Project and to obtain additional information on potential impacts to LCT. In subsequent discussions between the Service and BLM, the Service provided recommendations for revisions to the draft BA/EV. On May 9, 2002, the Service received BLM's letter dated May 6, 2002, which requested our concurrence with BLM's amended determination that the continuation of the Betze Project would not adversely affect LCT or the bald eagle. Your May 6, 2002, letter included changes to the draft BA/EV and changes to the Upper Willow Creek Enhancement Plan. On May 1, 2002, we received a copy of the final Upper Willow Creek Enhancement Plan dated April 3, 2002. The Service completed informal section 7 consultation on the date of this memorandum.

DESCRIPTION OF THE ACTION AREA

The *Action Area* is delineated by the 10-foot-aquifer drawdown contour line (determined by the combination of both Barrick and Newmont's model simulations) which defines the maximum extent of hydrogeologic impact due to groundwater pumping associated with Barrick and Newmont's mine operations (see attached Figure 8-4). Portions of the Boulder Flat, Maggie Creek, Marys Creek, Rock Creek Valley, Susie Creek, and Willow Creek Valley subbasins are located within the Action Area. Only the Maggie Creek Subbasin may be affected by Barrick and Newmont's water pumping operations.

The Goldstrike property is situated in the Boulder Flat Subbasin, a topographic feature that contains the drainages of Bell, Boulder, Brush, and Rodeo creeks. Brush and Bell creeks drain to Rodeo Creek, and Rodeo Creek converges with Boulder Creek in the northern portion of the Boulder Flat Subbasin, west of the active mining area. Elevations in Boulder Flat Subbasin range from 5,100 feet average mean sea level (amsl) in the foothills to over 8,700 feet amsl at the peak of the Tuscarora Mountains, a north-trending range typical of the Basin and Range physiographic province. All of Barrick's mining facilities are being conducted on private land owned by Barrick or Newmont with the exception of approximately 300 acres of a waste rock disposal area, ore stockpiles, and topsoil stockpiles, that are located on public lands.

AFFECTED SPECIES

LCT. The Maggie Creek Subbasin has a number of streams that either support or have the potential to support LCT, all within the upper portion of the Maggie Creek subbasin. Studies indicate that LCT occur in 9 of the 17 streams with potential to support trout in the Maggie Creek Subbasin. These streams include Maggie, Little Jack, Jack, Beaver, Toro Canyon, Coyote, Little Beaver, Williams Canyon, and Lone Mountain creeks. Potential LCT streams include Lake, Dip, Upper Maggie, Coon, Chicken, Simon, Spring, and Indian Jack creeks. Estimated miles of occupied/unoccupied LCT habitat in each of these streams is shown in Table 1. The length of habitat in each stream may vary annually depending upon streamflow and water temperature.

Table 1. Estimated miles of occupied/unoccupied LCT habitat in the Maggie Creek Subbasin Streams

Stream	Miles Occupied Habitat	Miles Unoccupied Potential Habitat
Maggie Creek (mainstem)	8.0	
Little Jack Creek	4.6	
Coyote Creek	6.5	
Beaver Creek	8.0	
Little Beaver Creek	1.1	
Toro Canyon Creek	2.3	
Williams Canyon Creek	1.1	
Jack Creek (spring-fed channel)	0.3	
Lone Mountain Creek	2.2	
Lake Creek		4.2
Dip Creek		1.6
Coon Creek		3.9
Chicken Creek		1.4
Simon Creek		2.0
Spring Creek		2.0
Indian Jack Creek (mainstem)		6.9
Upper Maggie Creek		6.3

Bald Eagle. There are no known nesting bald eagles in the project area. However, bald eagles infrequently winter along the Humboldt River.

PROPOSED ACTION

The gold deposits that Barrick is presently mining and plans to mine in the future are situated below the natural groundwater elevation. In order to mine the gold deposits, Barrick initiated a groundwater pumping program in February 1990. Barrick has pumped up to approximately 70,000 gpm. From 1990 to the first quarter of 1996, Barrick lowered groundwater elevations by approximately 1,300 feet and pumped approximately 446,000 acre-feet of water. In April 1996, Barrick reduced pumping rates to match water demand for mining, milling, and irrigation uses for a period of approximately 12 months. During that period, water levels rose approximately 225 feet due to Barrick's curtailment of groundwater pumping operations.

In 1997, Barrick increased pumping levels to approximately 65,000 gpm, and water levels began to recede. At the end of 1998, water levels were at approximately the 3,738-foot elevation (1,527 feet below the pre-mining elevation); and approximately 621,000 acre-feet of water had been pumped. Pumping rates were maintained above 60,000 gpm through the first quarter of 1999. As of February 2001, Barrick was pumping just under 31,000 gpm. In approximately 2010, dewatering would cease; however, approximately 2,000 to 4,000 gpm of ground water would be pumped for up to an additional 10 years for mine reclamation and mineral processing activities.

Barrick collects ground water from in-pit wells and sumps, horizontal drains, and perimeter wells. Initially the majority of the water was pumped from in-pit wells and sumps; however, Barrick has now established a well field outside the boundaries of the present mine that is capable of pumping most of the water needed to achieve Barrick's ground water drawdown objectives. Barrick has drilled over 134 wells in this field. In addition, Barrick has installed approximately 500,000 feet of horizontal drains in the walls of the mine that produce between 0 and 200 gpm. Water production from individual horizontal drains drops rapidly with time, usually stopping within a 4-week period. In the future, Barrick may drill additional wells on private land to replace existing wells that have gone dry.

Water is pumped from the production wells through a network of high-density polyethylene and steel pipes either to process water tanks or to a 72-inch-diameter gravity-flow pipeline. Approximately 4,000 to 8,000 gpm of water are delivered to the Goldstrike or Newmont Mine for mining and milling uses. Mining and milling uses of water include process make-up water for mill ore slurry or heap leach solution, road dust control watering, exploration drilling, and sanitary uses.

Water that is not used for mining or milling purposes is delivered to the gravity-flow pipeline. Barrick discharges water produced by its groundwater pumping operations to ground waters of the state via percolation, infiltration, and irrigation. Barrick anticipates that the present practice of delivering water from the well field to the TS Ranch Reservoir area through the gravity-flow pipeline will continue throughout the remaining life of the mine.

In 1990, Barrick, Newmont, and Elko Land and Livestock Company (ELLCO) (subsidiary of Newmont) implemented a Water Management Plan that described the manner in which water produced by Barrick's groundwater pumping operations would be used in Boulder Valley. The

1990 Water Management Plan envisioned Barrick providing water to ELLCO to irrigate more than 5,000 acres of lands on the TS Ranch. Barrick purchased and installed 15 center-pivot irrigation sprinklers in Boulder Valley and began delivering water from the TS Ranch Reservoir to these pivots in 1991. Since then, ELLCO has used the water delivered by Barrick to grow alfalfa and grass that it uses in its ranching operations or sells. In addition, ELLCO has used some water for livestock on the TS Ranch.

In 1993, Barrick identified an outcrop of rhyolite in upper Boulder Valley that was determined to be an effective infiltration area. Barrick initially developed a 4-acre infiltration basin and began delivering water to the basin in April 1994. In the fall of 1995, Barrick expanded the basin to 6 acres, which increased the infiltration capacity of the basin to approximately 15,000 gpm. Per protocol established by Barrick and Newmont, Barrick, in April 1994, began injecting water from Barrick's groundwater pumping operations into the rhyolite formation through wells. At present, Barrick estimates the capacity of the existing injection wells at approximately 28,000 gpm on an instantaneous basis.

In January 1997, Barrick completed construction of a water treatment facility and conveyance system and began discharging water produced by groundwater pumping operations to the Humboldt River. The treatment facility uses lime treatment and pH adjustment to lower the naturally occurring levels of total dissolved solids, fluoride, and boron in the ground water to levels that are below the Humboldt River water quality standards. The sludges from the treatment process are used as an alternative feedstock for the autoclave neutralization process. Cooling towers are used to lower the water temperature so that the Humboldt River temperature standards and dissolved oxygen standards are met. Barrick constructed a conveyance system composed of buried pipelines and a synthetically lined upland canal from the treatment plant to an outfall at the Humboldt River that is adequate to discharge up to 65,000 gpm of treated water from the groundwater pumping operations.

Barrick suspended operation of the Boulder Valley water treatment plant and discharges to the Humboldt River in early February 1999. At present, the use of infiltration and irrigation is sufficient to manage dewatering flows without the need for discharge to the Humboldt River.

Barrick presently anticipates that water will continue to be used for mining and milling purposes and delivered to Boulder Valley for irrigation during the irrigation season. Water that is not used for mining, milling, or irrigation purposes would be infiltrated. If excess dewatering water could not be infiltrated, it would be treated and discharged to the Humboldt River. The capacity of infiltration, injection, irrigation, and other beneficial uses to receive ground water produced by Barrick may be limited by Barrick's delivery of groundwater flows from the springs in Boulder Valley to those uses, by regulatory and other legal restrictions, and by other binding obligations to third parties.

Both Newmont and Barrick have developed numerical ground water models that encompass the regional hydrologic study area. Each model was used to predict the cumulative groundwater drawdown resulting from dewatering and water management at three mines (Goldstrike, Gold Quarry, and the proposed Leeville project). The Newmont model predicts the cumulative drawdown will encompass a substantially larger area than does the Barrick model. For purposes of National Environmental Protection Act cumulative effects analysis, the results from both the Barrick and Newmont model simulation were combined to illustrate the projected maximum extent of the 10-foot ground water drawdown associated with the three mine operations. The predicted maximum extent of the 10-foot drawdown contour line of the water table in the aquifer was selected to represent the general area of potential hydrogeologic impact. The 10-foot drawdown contour was created by selecting the maximum extent of the 10- foot drawdown isopleth in any modeled year. Therefore, the contour does not represent the actual 10-foot isopleth in one specific year, but its maximum extent for any location.

Most springs in the *Action Area* are fed by perched and colluvial aquifers, and therefore are not likely to be affected by mine dewatering. Field examinations, hydrogeologic evaluations, and geochemical studies indicate that most springs in the region are not hydraulically connected to the deeper ground water systems. Using chemical and isotopic data and geological information from Little Jack, Coyote, and Beaver creeks, Balleau Groundwater Consulting (BGC) developed a conceptual model for streams along the eastern slope of the Tuscarora Mountains. The model shows that springs and perennial streams at elevations above 6,000 feet are supported by locally recharged water stored in colluvial material. In 1998, the Desert Research Institute (DRI) evaluated the surface and ground water relationships in the eastern portion of the Tuscarora Mountains, and generally confirmed BGC's conceptual model of locally derived water. However, DRI also concluded that some of the flow in springs below 6,000 feet on the east side of the Tuscarora Mountains may come from deeper sources.

BARRICK MINIMIZING/ENHANCEMENT MEASURES

Wetland Mitigation Fund and Water Level and Flow Monitoring.

Wetland Mitigation Fund

Barrick established a trust fund that is available to be used by BLM to initiate onsite or offsite riparian and wetland protection or enhancement projects to minimize the impacts of Barrick's groundwater pumping and water management operations. In 1991, the trust fund was established at $660,000. By the end of March 2001, the fund had grown to over $1,002,000. BLM proposes to use monies (either principle and/or interest) to fund the following projects, listed in priority order, which were designed to enhance and protect LCT habitat within the Humboldt River Basin:

1. **Culvert Removal and Replacement in the Maggie Creek Subbasin ($100,000).** Currently culverts beneath the county road are believed to be restricting movement of LCT between tributary streams and the main-stem of Maggie Creek in the Maggie Creek Subbasin. Replacement of impassible culverts with structures designed for fish passage will facilitate development of a more functional metapopulation.

2. **Maggie Creek Land Exchange ($80,000).** The completion of this exchange will put more than 5 miles of Susie Creek in public ownership. Susie Creek is potential habitat for LCT. Increased public ownership of the Susie Creek drainage would ensure long-term protection of restored areas and increase opportunities for improved management of upstream reaches now under private ownership.

3. **SquawValley/Spanish Ranch Allotment Division Fence ($120,000).** BLM proposes to complete the construction of a division fence between the Squaw Valley and the Spanish Ranch Allotments. The Squaw Valley Allotment supports potential LCT metapopulations in the Toe Jam/Rock Creek and Upper Willow Creek drainages.

4. **Sherman Creek Land Exchange ($80,000).** BLM proposes to pursue a land exchange in which approximately 6 miles of the East and West branches of Sherman Creek would become public land. The West branch of Sherman Creek presently supports a small viable population of LCT.

5. **Dixie Creek Fish Barrier ($ Unknown).** The Humboldt River Distinct Population Segment (DPS) team has identified a need for a fish barrier in the lower reaches of Dixie Creek above the South Fork of the Humboldt River. Nonnative salmonids in the South Fork currently have unrestricted access to habitat occupied by LCT in the headwaters of Dixie Creek.

Water Level and Flow Monitoring

Barrick identified 19 seep and spring sampling locations that have been monitored annually since 1991, for flow rate, water quality, and vegetation. These sampling locations are situated along the crest and flanks of the Tuscarora Mountains. In 1995, Barrick began monitoring of an additional 17 stream, seep, and spring locations. Barrick prepares and submits annual monitoring reports to BLM. Barrick has agreed to conduct monitoring of surface waters, ground water observation ports, process solutions as required by other permits and approvals granted by state agencies, and to provide the results of the monitoring to BLM, until 2030. The following funds were established by Barrick to fulfill their monitoring and mitigation commitments:

Riparian Restoration Fund. Barrick has established a fund in the amount of $40,000 for BLM to use for the purchase and planting of seedlings or container plants in riparian or wetland areas to accelerate revegetation of areas adversely affected by Barrick's groundwater pumping and water management operations. To date, no riparian or wetland areas have been adversely affected by Barrick's groundwater pumping and water management operations, therefore, no expenditures have been made from this fund.

Long-term Review, Monitoring, and Mitigation Trust Fund. In 1991, Barrick established a $1,000,000 trust fund for BLM to use for the review, monitoring, or mitigation of potential impacts from Barrick's operations that were not specifically addressed in the mitigation stipulations or reclamation plan for the Betze Project. As of March 2001, the fund had grown to over $1,700,000. To date, no expenditures have been made from this fund.

Upper Willow Creek Habitat Enhancement Plan.

Under the plan, approximately 20.5 miles of occupied and/or potential LCT streams will be enhanced through extended rest from livestock grazing followed by the implementation of a riparian friendly grazing program. The Upper Willow Creek Enhancement Area (UWCEA) includes a total of 12,900 acres, with 2,838 acres in public ownership and 9,915 acres owned by Barrick. The proposed grazing program for the UWCEA will be implemented in three phases.

Phase 1. Continue to graze UWCEA under the existing livestock grazing program until August 1, 2003. Existing livestock grazing program is as follows:

Trail livestock between the Willow Creek Reservoir and the Lower Nelson Field using the ridges and not the riparian area along Willow Creek.

Livestock use of either or both the Lower and Upper Nelson Fields must not exceed two weeks in duration.

Remove livestock from the Upper Nelson Field by August 1.

Place salt blocks away from springs and streams in both the Upper and Lower Nelson Fields.

Phase 2. The UWCEA will be closed to livestock grazing until the streams within the UWCA (Lewis and Nelson Creeks and that reach of Willow creek located between Willow Creek Reservoir and the eastern boundary of the Squaw Valley Allotment) reach proper functioning condition (PFC) criteria as defined in BLM Technical Reference 1737-9 and achieves desired future condition (DFC) criteria outlined n section C, of Barrick's *Upper Willow Habitat Enhancement Plan.*

Phase 3. Implement the long-term grazing system upon achieving the PFC/DFC criteria outlined in section C, of Barrick's *Upper Willow Habitat Enhancement Plan.* Livestock grazing would be authorized at appropriate levels consistent with carrying capacities defined as AUMs to maintain or improve PFC/DFC criteria achieved through rest. Annual riparian stubble height and streambank trampling objectives will be established to ensure significant progress towards attainment of objectives is being made. The permittee will be responsible for ongoing observations to ensure that stubble height, streambank trampling criteria, upland, and riparian utilization associated with livestock use are not exceeded. The criteria for riparian/streambanks are: 1) herbaceous utilization shall ensure a 4-inch stubble height is left when livestock are removed and a 6-inch stubble height is present at the end of the growing season; 2) woody utilization shall not exceed 20 percent on willows and/or 10 percent on aspen; 3) streambank trampling shall not exceed 10 percent; and 4) grazed pastures shall be rested the following year. Under the long-term grazing system, livestock grazing in the UWCEA will be permitted under the following conditions:

Even Years. The UWCEA may be used in either the spring or fall season but not both seasons in the same year. Spring use period is defined as prior to July 1 with a three-day flexible on-date and no flexibility in off-date. The fall use period is defined as September 16 through October 15 with no flexibility in on-date and a three-day flexible off-date. Flexibility in on- and off-dates will not allow for livestock use in excess of carrying capacity.

Odd Years. The UWCEA will be rested.

BLM and Barrick will evaluate the monitoring data collected on the UWCEA to determine if the previous season of use exceeded the utilization criteria for riparian herbaceous and/or woody vegetation and/or exceeded the bank trampling criteria. If any of these criteria are exceeded, BLM will initiate the following actions:

> BLM and Barrick will modify the existing grazing system for the UWCEA (e.g., reduction in season of use, reduction in numbers of livestock, extended period of rest or a combination of all these strategies) for purposes of avoiding exceeding the criteria for utilization of riparian vegetation and bank trampling. BLM will repeat this strategy until the criteria for utilization of riparian vegetation and bank trampling are met.

SERVICE CONCURRENCE

The Service concurs that BLM's approval of Barrick's proposed Betze Project, as proposed, is not likely to adversely affect LCT or the bald eagle and their habitat. The Service bases its concurrence on the following:

- Hydrologic studies conducted in the Maggie Creek Subbasin show that most of the springs/streams located above 6,000 feet are not hydraulically connected to the deeper groundwater systems and therefore, would not be affected by groundwater pumping;

- Combined ground water modeling from Barrick and Newmont which illustrates the maximum extent of the cone of depression predicts that the occupied LCT streams within the Maggie Creek Subbasin below 6,000 foot would not be affected by the groundwater pumping;

- Absence of any evidence from existing monitoring wells that the current groundwater pumping is impacting the water table or spring/stream surface flows in the upper Maggie Creek Subbasin;

- Presence of a network of existing monitoring wells located in various geological strata and at a range of depths for the purposes of monitoring changes in the water table throughout the extent of the dewatering cone of depression, plus a commitment by Barrick to install up to three additional wells, if warranted;

- Presence of a trust account in the amount of over $1,000,000, to be used by BLM to initiate onsite or offsite riparian and wetland protection or enhancement projects to minimize the impacts of Barrick's groundwater pumping and water management operations. BLM proposes to use the fund for the following riparian or wetland projects: 1) culvert removal and replacement in the Maggie Creek Subbasin, 2) Maggie Creek land exchange, 3) the Squaw Valley/Spanish Ranch Allotment division fence, 4) Sherman Creek land exchange, and 5) Dixie Creek fish barrier;

- Presence of a trust account (*Long-term Review, Monitoring, and Mitigation Trust Fund*) in the amount of over $1,700,000, to be used by BLM to review, monitoring, or mitigation of potential impacts from Barrick's operations that were not specifically addressed in the mitigation stipulations or reclamation plan for the Betze Project;

- Presence of a trust account (*Riparian Restoration Fund*) in the amount of $40,000 for BLM to use for the purchase and planting of seedlings or container plants in riparian or wetland areas to accelerate revegetation of areas adversely affected by Barrick's groundwater pumping and water management operations;

- Commitment by Barrick to implement the *Upper Willow Creek Enhancement Plan*; and

- BLM will initiate an annual multi-cooperators (BLM, FWS, NDOW, Barrick) interdisciplinary field evaluation of the ongoing riparian monitoring program.

After further review of the revised proposed action, subsequent discussions and review of information submitted as part of this consultation, we have determined formal consultation pursuant to section 7 of the Act is not required.

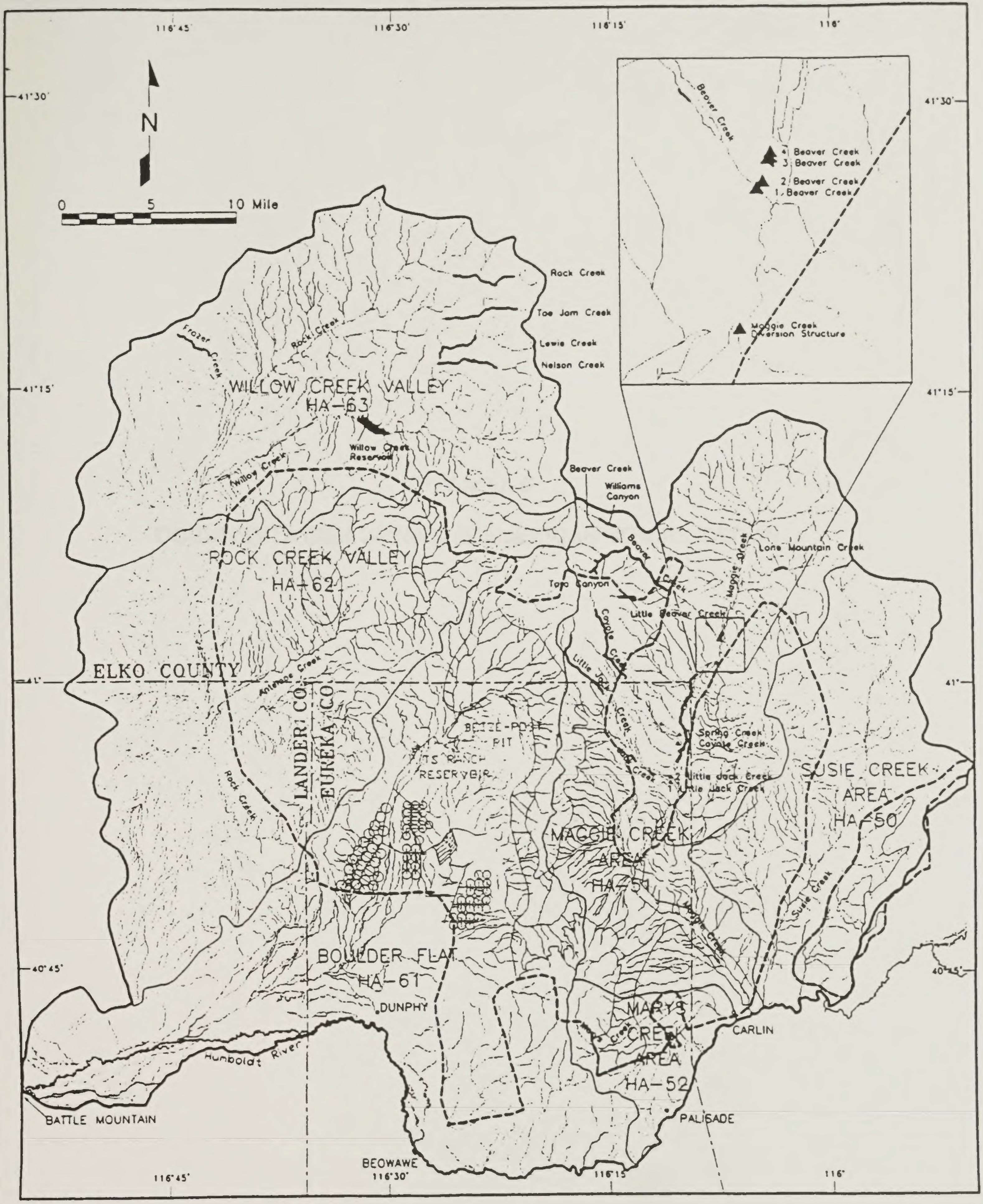
This response constitutes informal consultation under 50 CFR § 402.13 of our interagency regulations governing section 7 of the Act. BLM should reinitiate section 7 consultation if: (1) the proposed action is changed or (2) new biological information becomes available concerning listed or candidate species which may be affected by the proposed action.

We appreciate the cooperation of BLM and Barrick throughout this consultation process. If you have any questions regarding this informal consultation, please contact me or Mark Maley at (775) 861-6300. Thank you for your concern for threatened and endangered species.

For Robert D. Williams

Attachment (Figure 8-4)

cc:
Richie D. Haddock, esq., Barrick Management Corporation, Salt Lake City, Utah



Legend

——— Ground Water Basin Boundary

Stream

—·—·— County

▬▬▬ Lahontan Cutthroat Trout Habitat

– – – – – Cumulative Drawdown Area (≥10 Feet of Drawdown)

▭ Areas where Perennial Waters could Potentially be Impacted by Drawdown [1]

▭ Areas where Perennial Waters have a Low Probability of Being Impacted by Drawdown [1]

⦶ Center Pivot Irrigation

▲ Culverts

[1] Does not include potential impacts to perennial waters located outside the cumulative 10-foot drawdown contour.

Figure 8-4
Lahontan Cutthroat Trout Habitat Potentially Affected by Cumulative Drawdown

APPENDIX D

DOCUMENTATION OF NATIVE AMERICAN CONSULTATION

Presented at 7/17/02 Betze Consultation meeting - Hilton Garden Inn

TE-MOAK TRIBE OF WESTERN SHOSHONE
525 Sunset Street • Elko, Nevada 89801
(775) 738-9251
FAX - (775) 738-2345

BUREAU OF LAND MANAGEMENT
ELKO FIELD OFFICE
2002 JUL 17 PM 2:30

July 15, 2002

Helen Hankins, Manager
Elko Field Office
Bureau of Land Management
3900 East Idaho Street
Elko, NV 89801

Re: Barrick Goldstrike – Betze SEIS

Dear Ms. Hankins,

The mining of the Betze Project will have a highly significant impact on a traditional cultural property that the Western Shoshone recognize, Rock Creek and Rock Creek Canyon. Rock Creek and Rock Creek Canyon are cultural and spiritual areas that the Western Shoshone has been associated with since time immemorial. Rock Creek and Rock Creek Canyon have the high potential to be listed on the National Register of Historic Places. Archaeologists from the Elko Bureau of Land Management have spent a great deal of time and effort mapping and surveying this highly cultural area. Approximately 110 sites have been identified, of which 17 are in the proposed Traditional Cultural Property. All of these are prehistoric or contact-period sites associated with Native Americans within that specific area. In essence, this TCP can be considered as a District composed of archaeological and cultural locations. *(Rusco (1974); Botti (1985); Clay and Hemphill (1986) and Clay (1997).*

This area is important to the Western Shoshone; we are concerned with the water in Rock Creek. The cumulative impact of the dewatering of the Betze Project, South Operations Area Project, and Leeville Project may have a negative affect on the water flow in Rock Creek. Especially, the Betze Project, because this mine is much bigger than the other two projects and is geographically closer to Rock Creek. We would like the BLM to insure that the water flow in Rock Creek is not decreased. And, if it does decrease due to the dewatering process, we want documentation to show how BLM is going to resolve the problem of the water in Rock Creek decreasing.

Not only will the dewatering process affect Rock Creek, but it will also definitely disrupt all life in the surrounding area of these projects. Wildlife depend on the natural "uncontaminated" springs. Water in desert land is paramount in our concerns because drinkable, swimmable waters serve humans and animals.

Attached please find a resolution that has been passed by the Te-Moak Tribal Council in support of Rock Creek. Clearly our Tribe is concerned about the future of Rock Creek and Rock Creek Canyon.

The Western Shoshone people realize mining is an important economic resource to the state of Nevada. We know that there is a great demand for gold and other minerals. However, we believe that exploration and mining can and should be done using methods that are more conducive to cultural preservation and environmental protection.

Respectfully submitted,

Felix Ike, Chairman
Te-Moak Tribe of Western Shoshone

(1) Attachment – Resolution #02-TM-10

Presented at 7/17/02 Betze Consultation meeting - Hilton Garden Inn

TE-MOAK TRIBE OF WESTERN SHOSHONE

RECEIVED
BUREAU OF LAND MANAGEMENT
ELKO FIELD OFFICE

2002 JUL 17 PM 2:30

RESOLUTION OF THE GOVERNING BODY OF THE TE-MOAK TRIBAL COUNCIL

RESOLUTION NO. 02-TM-10

BE IT RESOLVED BY THE TE-MOAK TRIBAL COUNCIL OF WESTERN SHOSHONE INDIANS OF NEVADA, THAT

WHEREAS, the Te-Moak Tribal Council of the Te-Moak Tribes of Western Shoshone Indians of Nevada is organized under the Indian Reorganization Act of June 18, 1934, as amended, to exercise for the promotion of economic and social welfare of its tribal members, and

WHEREAS, the Te-Moak Western Shoshone Council is the parent council for the communities of Battle Mountain, Elko, South Fork and Wells, and

WHEREAS, the Te-Moak Tribe of Western Shoshone recognize Rock Creek and Tosawihi Quarries as cultural and traditional properties of the Western Shoshone. The Te-Moak Tribe of Western Shoshone will support and help protect Rock Creek and Tosawihi Quarries from future destruction from entities that will endanger the physical and spiritual properties of these sacred places, and

WHEREAS, the location for Rock Creek is described as the following:

Rock Creek Canyon is located approximately twenty-three miles northeast of Battle Mountain, Nevada and approximately thirty-four miles west northwest of Carlin, Nevada. The portion of Rock Creek of highest, religious, ceremonial and historical interest is located fifteen miles north of Interstate 80, approximately at the exit to Argenta (itself fifteen miles east of Battle Mountain). The canyon drains the Sheep Creek Range north of the Humboldt River, northwest of Boulder Valley.

WHEREAS, the location form the Tosawihi Quarries is described as the following:

The Tosawihi Quarries are located approximately 30 miles northeast of Battle Mountain in northeastern Nevada.

NOW THEREFORE BE IT RESOLVED, the Te-Moak Tribal Council hereby submits the preceding paragraphs in support of protecting Rock Creek and Tosawihi Quarries, traditional and cultural properties of the Western Shoshone.

C-E-R-T-I-F-I-C-A-T-I-O-N

I, the undersigned as Chairman of the Te-Moak Tribal Council of the Te-Moak Tribe of Western Shoshone Indians of Nevada, do hereby certify that the Council is comprised of 10 members of whom_ 7_were present at a duly meeting on the 4th day of April, 2002, and the foregoing Resolution was adopted by a vote of _6__ FOR,_0__ AGAINST, and _0__ ABSTENTIONS, pursuant to Article 4, section 3 (n) of the Constitution of the Te-Moak Tribe of Western Shoshone Indians of Nevada.

Felix Ike, Chairman
Te-Moak Tribe of Western Shoshone

ATTEST:

Recording Secretary
Te-Moak Tribe of Western Shoshone

Presented at 7/11/02 Betze Consultation meeting [illegible]

ELKO BAND COUNCIL

1745 Silver Eagle Drive • Elko. Nevada 89801
775-738-8889 • Fax 775-753-5439

RECEIVED
BUREAU OF LAND MANAGEMENT
ELKO FIELD OFFICE
2002 JUL 17 PM 2:30

RESOLUTION OF THE GOVERNING BODY
OF THE
ELKO BAND COUNCIL

Resolution No. 2002-EBC-18

BE IT RESOLVED BY THE ELKO BAND COUNCIL, THAT

WHEREAS. this organization is an Indian Organization as defined under the Indian Reorganization Act of June 18. 1934. as amended. to exercise certain rights of home rule and for the promotion economic and social welfare of its Tribal Members. and

WHEREAS, the Elko Band Council, a Constituent Band of the Te-Moak Tribe of Western Shoshone Indians of Nevada, and is the governing body of the Elko Indian Colony. and

WHEREAS, the Elko Band Council has the obligation to protect, preserve, and promote the religious and cultural rights of its Tribal members, ancient customs and beliefs of the Ancestors and Hereditary Descendants of the Western Shoshone Indians of Nevada and

WHEREAS, the Elko Band Council upholds Resolution No. 99-EBC-12 for protecting and preserving Traditional Cultural Properties at Rock Creek and Tosawihi Quarry and

WHEREAS. the Elko Band Council feels the cumulative impact of dewatering will effect the natural springs and water supply in and around Rock Creek, area creeks, hot springs, and Tosawihi Quarry and

WHEREAS, the Elko Band Council requests that every attempt be made to monitor and protect the natural resource of water at the Rock Creek and Tosawihi Quarry sites by the Bureau of Land Management.

NOW THEREFORE BE IT RESOLVED, Elko Band Council objects to the dewatering projects. Betze SEIS, Newmont's South Operations Area Project Amendment (Gold Quarry Mine), and Newmont's Leeville Plan of Operation. for their possible negative impact upon Rock Creek, area Creeks, hot springs, and Tosawihi Quarry. On behalf of Rock Creek, area creeks, hot springs, and Tosawihi Quarry, to help justify preservation and protection of these cultural and natural resources, the Elko Band Council believes that the overall negative environmental impacts must be minimized to the greatest extent possible to protect further devastation and contamination against our natural resource, water, and

BE IT FINALLY RESOLVED THAT. the Elko Band Council is recommending that the consultation process continue concerning Rock Creek and Tosawihi TCPs, as this is one of the most important historical sites of the Western Shoshone.

C-E-R-T-I-F-I-C-A-T-I-O-N

I. the under signed as Chairman of the Elko Band Council do hereby certify that Elko Band Council is composed of 7 members. of whom 4 constituting a quorum were present at a duly held meeting on the 10th day of July. 2002. and that the foregoing was duly adopted as such meeting by a VOTE of 3 FOR. 0 AGAINST, 0 ABSTENTION. pursuant to Article 4 Section 12(b) of the Constitution of the Te-Moak Tribe of Western Shoshone Indians of Nevada.

William Woods

William Woods. Vice-Chairman
Elko Band Council

ATTESTED BY:

Anissa Dick

Recording Secretary

RESOLUTION OF THE GOVERNING BODY
OF THE
ELKO BAND COUNCIL

RESOLUTION NO. 99-EBC–12

BE IT RESOLVED BY THE ELKO BAND COUNCIL, THAT

WHEREAS, this Organization Known as the Elko Band Council as defined under the Indian Reorganization Act of June 1 934, as amended, to exercise certain rights of home rule and to be responsible for the promotion of the, Western Shoshone Ancestral Ancient Customs, and Beliefs, and Contemporary Social and Economic welfare of its Tribal Members, and

WHEREAS, the Elko Band Council does endorse, support and identify the historical and cultural importance of preserving and protecting those *Traditional Cultural Properties,* cultural and natural resources having a valuable unwritten history, to the ancient customs and beliefs of the Ancestors and Hereditary Descendants of the Western Shoshone Indians of Nevada, and

WHEREAS, the Elko Band Council historically regards and identifies TOSAWIHI QUARRY as a *Traditional Cultural Property* and declares it to having significant historical properties relevant to the Ancient Customs and Beliefs of the Ancestors and Hereditary Descendants of the Western Shoshone Indians of Nevada, and

WHEREAS, the Elko Band Council does request every attempt be made feasible towards preserving and protecting the complete area in and about TOSAWIHI QUARRY in order to safe guard such area's essential for; contemporary ceremonial use; educational purposes; historical education and oral traditional purposes, and

WHEREAS, the Elko Band Council historically regards and identifies ROCK CREEK as a *Traditional Cultural Property* and declares it to having significant historically properties relevant to the Traditional Ancient Customs and Beliefs of Ancestors and Hereditary Descendants of the Western Shoshone Indians of Nevada, and

WHEREAS, the Elko Band Council does request that every attempt must be made feasible towards preserving and protecting the complete area in about ROCK CREEK in order to safe guard such area's necessary for; ceremonial use; educational purposes; historical education and oral traditional purposes, and

WHEREAS, the Elko Band Council does recognize that the Bureau of Land Management is a Federal Administrative Agency that functions only pursuant to delegated authority from Congress, and

WHEREAS, the Elko Band Council does recognize that the Bureau of Land Management administrative officials are directly accountable for those installed basic administrative rules and regulations mandated by federal law, and

WHEREAS, the Elko Band Council does recognize that the Bureau of Land Management administrative officials can be subject to suits for injunctive and declaratory relief for breach of those mandated laws, and

WHEREAS, the Elko Band Council does recognize that the Bureau of Land Management administrative officials, are in fact subject to judicial review in which they exceed their delegated authority by neglecting such federal mandated laws executed to assist in the preservation and protection of those prehistoric, historic, ceremonial and burial grounds of the Western Shoshone Indians of Nevada, and

WHEREAS, the Elko Band Council does recognize that the Bureau of Land Management administrative officials shall recognize that a nation, tribe or band is regarded as an Indian entity where the relations of the Indians in their organized or tribal capacity has been fixed and recognized by treaty, that being the 1863 Ruby Valley Treaty established between the Western Shoshone Indians of Nevada and the United States Government, and

NOW, THEREFORE BE IT RESOLVED, that the Elko Band Council in order to justify the preservation and protection of those cultural and natural resources, such as prehistoric and historical campsites, RELIGIOUS and TRADITIONAL use area's of the Ancestral Western Shoshone Indians of Nevada, does hereby endorse and support the Elko District Office of the Bureau of Land Management *intent* to "NOMINATE" ROCK CREEK and TOSAWIHI QUARRY areas as eligible for the NATIONAL REGISTER, as *Traditional Cultural Properties,* and

BE IT FURTHER RESOLVED, that further Consultation with other known Western Shoshone Governments, Groups and or Organizations will be a relevant factor established by the Elko District Office of the Bureau of Land Management regarding the proposed action and potential impact the Barrick and Newmont dewatering operations will in fact have in those area's of TOSAWIHI QUARRY and ROCK CREEK, and

BE IT FURTHER RESOLVED, that the Elko Band Council and the Western Shoshone Historic Preservation Society request a formal statement by the Elko District Office of the Bureau of Land Management be submitted to the Western Shoshone prior to any allowed dewatering activity by Newmont Gold and or Barrick Mining Company, and said formal statement be made available to the Elko Band Council, Western Shoshone Historic Preservation Society and other Western Shoshone Governments, Groups and Organizations in order to know that the TOSAWIHI QUARRY and ROCK CREEK will be safeguarded, preserved and protected, and

BE IT FURTHER RESOLVED, that the Elko District Office, Newmont Gold Company and Barrick Gold Company will not distort the historical and religious value of TOSAWIHI QUARRY and or ROCK CREEK in any matter pending further consultation with other Western Shoshone Governments, Groups and Organizations, and

BE IT FURTHER RESOLVED, that the Elko Band Council and the Western Shoshone Historic Preservation Society hereby submit this Resolution as a relevant factor of support and endorsement towards the Elko Districts Office intent to *NOMINATE* TOSAWIHI QUARRY and ROCK CREEK for nomination to the National Register as a Traditional Cultural Property, and

BE IT FINALLY RESOLVED, that an Memorandum of Understanding between the Elko Band Council and the Western Shoshone Historic Preservation Society is approved and shall be recognized by that government agency so mentioned above.

C-E-R-T-I-F-I-C-A-T-I-O-N

I, the undersigned, as Chairman of the Elko Band Council do hereby certify that the Elko Band Council is composed of 7 members of whom 6 constituting a quorum were present at a duly held meeting on the 17th day of March 1999, and that the foregoing was duly adopted at such meeting by a vote of 6 FOR, 0 AGAINST, 0 ABSTENTIONS, pursuant to the authority contained under Article 4, Section 12(b) and Section 13 of the Constitution of the Te-Moak Tribe of Western Shoshone Indians of Nevada.

Wilbur Wood
Wilbur Woods
ELKO BAND COUNCIL

ATTEST:
Marlene Cortez
RECORDING SECRETARY

1/23/01

RESOLUTION OF THE GOVERNING BODY
OF THE
SOUTH FORK BAND COUNCIL

Resolution No. 01-SF-04

BE IT RESOLVED BY THE SOUTH FORK BAND COUNCIL:

WHEREAS, this is a constituent Band known as the South Fork Band Council as defined by the Indian Reorganization Act of June 18, 1934, as amended and operates and functions in accordance with the Constitution of the Te-Moak Tribe of Western Shoshone Indians of Nevada, approved on August 26, 1982, and

WHEREAS, the South Fork Band Council has the obligation to its' tribal members to defend, preserve and sustain the sacred sites, burial sites, spiritual sites, and natural resources on our aboriginal homelands, and

WHEREAS, the region of Rock Creek and Tosawihi Quarries are of great religious significance and sacred to the Western Shoshone people, and

WHEREAS, for the Western Shoshone People and all other Indigenous People, WATER IS LIFE, impacts, either physical or spiritual, will affect the ability of Western Shoshone to maintain cultural traditions, and

WHEREAS, the obvious harmful impacts upon the elements of traditional lifeways of the Western Shoshone, particularly, water, medicinal plants and various animal species, principally, sage grouse habitat will greaten in these regions with the ongoing mine dewatering, and

WHEREAS, past, present and the foreseeable activities in these regions will result in a increasing impact to the resources that are of vital importance to the Western Shoshone peoples traditional religious practices, and

WHEREAS, the protection of both the Rock Creek and Tosawihi Quarries are of the utmost importance to the Western Shoshone.

NOW THEREFORE BE IT RESOLVED, the South Fork Band Council is in opposition to the Dewatering and Water Management Operations for the Betze, South Operations and Leeville Project.

BE IT FURTHER RESOLVED, the South Fork Band Council by adopting this resolution is requesting that the ongoing and future dewatering of Barrick Goldstrike and Newmont Gold Mine immediately cease.

C-E-R-T-I-F-I-C-A-T-I-O-N

I, the undersigned, as Chairman of the South Fork Band Council do hereby certify that the South Fork Band Council is composed of seven (7) members of whom __6___ constituting a quorum were present at a duly held meeting on the __23rd__ day of January 2001, and that the foregoing resolution was adopted at said meeting by a vote of __6__FOR, __0__AGAINST, __0__ABSTAINED, pursuant to Article 4, Section 12 (a) and (b) and Section 3 of the Constitution of the Te-Moak Tribe of Western Shoshone Indians of Nevada.

Larson R. Bill, Chairman
South Fork Band Council

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Elko Field Office
3900 E. Idaho Street
Elko, Nevada 89801-4611
(775) 753-0200
(775) 753-0260 FAX
http://www.nv.blm.gov

In Reply Refer To:
8100/1-1738
G.D. 8/5/02
8-5-02

Certified Mail No.
Return Receipt Requested

AUG 5 2002

Dear: See attached list

The purpose of this letter is to inform you of the closure of government-to-government consultation on the Betze Supplemental Environmental Impact Statement (Betze SEIS) for Barrick Goldstrike Mines and to request that any further comments, letters, or resolutions, concerning this project, be received by the Bureau of Land Management, Elko Field Office, no later than August 16th, 2002.

On July 17, 2002, a government-to-government consultation meeting was held at the Hilton Garden Inn in Elko, NV, concerning the mitigation plan in the Betze SEIS. Leadership from the BLM (Elko Field Office), the Temoak Tribal Council, Elko Band Council, Battle Mountain Band Council, and a representative of the South Fork Band Council attended the meeting. Also in attendance were various specialists from the BLM, a representative from Barrick Goldstrike, the Temoak Environmental Department, and individuals representing the Western Shoshone.

During the meeting described above, a letter and resolutions from the Temoak Tribal Council (02-TM-10) and Elko Band Council (2002-EBC-18) were presented. Also, during the meeting, some individuals indicated that they desired that certain letters or other information be included as part of the final Betze SEIS and made a part of the official record for this project.

This office would appreciate it if tribal leaders, or individuals or organizations could confirm in writing which information they would like to be a part of the public record. While a written statement with an original signature is preferred for the record, the BLM will also accept a fax or a telephone call. Any phone calls should be directed to Mr. Gerald Dixon, Native American Coordinator, at (775) 753-0383. It must also be stated at this time that consultation will remain ongoing for the Rock Creek and Tosawihi Quarry TCPs as new projects present themselves.

Sincerely,

David J. Vandenberg

DAVID J. VANDENBERG
Manager, Nonrenewable Resources

Gdixon:GD8/5/02

Felix Ike – Chair 7002 0860 0006 9272 0508
Te-Moak Tribal Council
525 Sunset Street
Elko, NV 89801
Cc: Jennifer Bell

Fermina Stevens – Chair 7002 0860 0006 9272 0522
Elko Band Council
1745 Silver Eagle
Elko, NV 89801
Cc: Alfreda Jake

Terry Gibson – Chair 7002 0860 0006 9272 0546
Duck Valley Sho-Pai Tribe
P.O. Box 219
Owyhee, NV 89832
Cc: Ted Howard

Victor McQueen – Chair 7002 0860 0006 9272 0560
Ely Shoshone Council
16 Shoshone Circle
Ely, NV 89301
Cc: Lorinda Sam

Christopher Sewall 7002 0860 0006 9272 0584
Western Shoshone Defense Project
P.O. Box 211308
Crescent Valley, NV 89821

Stanford Knight – Chair 7002 0860 0006 9272 0515
Battle Mountian Band Council
37 Mountain View Drive, Suite C
Battle Mountain, NV 89820
Cc: Bernice Lalo

Larson Bill – Chair 7002 0860 0006 9272 0539
South Fork Band Council
21 Lee Unit B 13
Spring Creek, NV 89815
Cc: Wayne Bill & Dallas Smales

Willie Johnny – Chair 7002 0860 0006 9272 0553
Wells Band Council
P.O. Box 809
Wells, NV 89835
Cc: Aurora Aboite

Dianne Yupe 7002 0860 0006 9272 0577
Shoshone-Bannock Tribes
P.O. Box 306
Fort Hall, ID 83203

WESTERN SHOSHONE DEFENSE PROJECT
P.O. Box 211308, Crescent Valley, Nevada 89821
phone: 775-468-0230, fax: 775-468-0237, email: wsdp@igc.org

ELKO DISTRICT
DM
ADM
PLAN/NEPA
LAW ENF
NON-REN ✓
RENEWABLE
S.S.
FIRE
REHAB
CF CODE:
X=ACTION

August 16th, 2002

David J. Vandenberg,
Manager, Non-Renewable Resources
Elko Field Office, Bureau of Land Management
3900 E. Idaho St.
Elko, NV 89801

Re: Betze Supplemental Environmental Impact Statement Consultation

Dear Mr. Vandenberg,

We have received a letter from you dated August 5th, 2002 in which you state the BLM's intention of "closing" consultation regarding the Betze SEIS. However you also state that "consultation will remain ongoing for the Rock Creek and Tosawihi Quarry TCP's" We find this very confusing as the primary impact and concern expressed by Shoshone people regarding this project is the potential for the dewatering to impact waters in the TCP areas. Thus is seems to be a contradictory statement to say that consultation is closed for the Betze SEIS yet still open for Rock Creek and Tosawihi. Could you please clarify the legal and practical effect of this "closing" of consultation?

We still remain concerned that there has not been a firm and clearly stated commitment on the part of the BLM or Barrick to prevent dewatering impacts from affecting cultural resources, particularly creeks and springs associated with cultural use. However, we appreciate the progress that has been made in addressing some of these issues, especially the provisions within the Barrick mitigation plan to better monitor dewatering impacts in the areas of concern, improve riparian areas upstream and especially transferring 1.5cfs of Barrick's vested water rights to maintain baseflow in Rock Creek.

It is our opinion that greater efforts by Barrick to return water to the groundwater aquifer could reduce the size of the cone of depression and prevent impacts associated with this cone. Spring "improvements" are not acceptable mitigation to the destruction or drying of culturally significant waters. If dewatering estimates prove wrong (as they have in the past) what provisions are there to prevent a declining water table from drying the springs and /or creeks? In other words, what if the expected increased flow in Rock Creek due to upstream grazing improvements and dedicated baseflow proves to be insufficient to maintain flows? What kind of mechanism exists that prompts the mine or BLM to take action and what would the action be? Are there contingency plans? Experience has demonstrated that without a clear chain of command, the regulators and the project operators will spend much time arguing over whether an impact exists, and how the impact will be addressed.

We look forward to receiving your answers. The WSDP remains a committed participant in the efforts to protect Western Shoshone cultural sites such as the Rock Creek and Toswihi areas. We expect that our previous correspondence will be part of the record, excepting any marked as confidential.

Sincerely,

Christopher D. Sewall

Christopher Sewall
Program Director, WSDP

The Western Shoshone Defense Project is an affiliate of the Seventh Generation Fund for Indian Development

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Elko Field Office
3900 East Idaho Street
Elko, Nevada 89801
http://www.nv.blm.gov/Elko

In Reply Refer To:
3809(NV-013)
1793.3

SEP - 6 2002

Certified Letter No. 7002 0860 006 9272 1284

Alice M. Baldrica, Deputy
State Historic Preservation Officer
100 North Stewart Street
Carson City, Nevada 89701-4285

Dear Ms. Baldrica:

We have enclosed a copy of the appendices from the draft version of Barrick Goldstrike's Final Supplemental Environmental Impact Statement (SEIS) for the Betze Project (SEIS mitigation plan and Upper Willow Creek habitat enhancement plan) for your section 106 review. We request your comments on the appendices and our assessment that adverse impacts to the Rock Creek Traditional Cultural Property (TCP), while unlikely, are mitigated in the proposed plans.

The "Cumulative Impact Analysis of Dewatering and Water Management Operations for the Betze Project, South Operations Area Project Amendment, and Leeville Project" (CIA) was previously sent to your office for the SOAPA and Leeville projects but continues to be relevant for our discussion and your analysis. We will provide you with another copy upon your request.

Through consultation initiated on October 1, 1998 and several subsequent meetings with the Western Shoshone on potential effects of mine dewatering, the BLM recognized that two TCPs were present in the Area of Potential Effect (APE) for cumulative impacts of dewatering groundwater from three mining projects: the Betze SEIS; Newmont Mining Corporation's Leeville underground mining project ("Leeville") and Newmont's South Area Operations Project Amendment (SOAPA). The BLM determined that both the Rock Creek TCP and Tosawihi TCP were eligible to the National Register. On May 19, 1999, your office concurred with these determinations.

A final consultation meeting was held with the Western Shoshone on July 17, 2002 to discuss the SEIS and mitigation plans. Issues discussed at this and previous meetings are addressed in the SEIS and mitigation plans, they include;

- The Tosawihi TCP springs,
- Water flow and springs within the Rock Creek TCP,

- Sage grouse, and
- Concerns about impacts to the environment in general.

A mailing following the July 17th meeting notified the Western Shoshone that any further comments must be received by August 16, 2002, closing consultation on the Betze SEIS project. The only letter received was from the Western Shoshone Defense Project. They questioned how BLM could close consultation for this project, yet continue to consult on Tosawihi and Rock Creek TCPs. A letter in response from BLM addressed this question (enclosed).

Your office has concurred with BLM's determination of No Effect to these TCP's from the SOAPA and Leeville projects (letters dated June 15, 2001 and June 4, 2002). BLM's determination of No Effect to the springs in the Tosawihi and Rock Creek TCP's, which results, from two separate models, which revealed a situation of no contribution to the growth of the cone of depression in the direction of those properties.

In the Betze Project SEIS, the cone of depression from that project was shown to approach the Tosawihi and Rock Creek TCP's. However, the springs in the Tosawihi TCP are protected from any dewatering impact by virtue of their being fed by perched aquifers, which are situated above the regional water table and of local extent. Therefore, BLM has made a No Effect determination for the Tosawihi TCP.

The issues that exist for the Rock Creek TCP with regard to Betze are the springs within the TCP and Rock Creek itself which are both contributing elements to the TCP. BLM's analysis shows that although neither is likely to be directly affected, the agency is ensuring that the mining company will take all reasonable efforts to protect both the springs and Rock Creek. Barrick's position is that the APE that includes Rock Creek is based on a model prepared by the Newmont Mining Corporation and not reflected in the modeling research they have completed. BLM, however, has determined that cumulative effects will be based upon Newmont's model due to the uncertainties involved with modeling in general and the larger APE that Newmont's model predicted. Consequently Barrick developed several protective measures to add to their existing mitigation planning, which include the Willow Creek Enhancement Plan, to respond to the assessment.

Barrick's Mitigation and the Willow Creek Enhancement Plans protect the springs in the Rock Creek TCP in several ways: Barrick's existing groundwater well array would show any potential drawdown in the groundwater feeding the springs permitting mitigating measures to be developed and implemented. The groundwater monitoring array will be operated by Barrick at least through 2030, after which a Long Term Monitoring Fund will provide for its continued existence for approximately 100 years. Barrick's re-injection wells for groundwater are actually between the Betze pit and lower Rock Creek Canyon, thus providing a temporary groundwater mound, that if utilized would partially offset the expanding cone-of-depression. Re-injected water is from the same generalized area and would be similar of similar water quality. Should effects to the springs in lower Rock Creek Canyon appear likely, BLM would re-open consultation with the Western Shoshone and your office on ways to use the Long-Term Environmental Monitoring and Mitigation Fund, established by Barrick, to minimize or eliminate effects to the springs.

While Barrick has disagreed that its dewatering operations would have any direct or indirect impacts to the base flow of Rock Creek based on their modeling research, Barrick will convey

1.5 cfs of senior water rights on Rock Creek to the BLM and the Nevada Division of Wildlife. This quantity is equivalent to the maximum predicted potential impact and 25% of the base flow. The advantages of this conveyance is that regardless of the cause, any decrease in flow to Rock Creek whether from drought, grazing, mining or other natural or human-caused impacts, could be addressed by the senior water rights.

The BLM has also recognized that sage grouse are important to the Western Shoshone. The Willow Creek Enhancement Plan restores or enhances a nesting area on Willow Creek. In addition Barrick is contributing an additional $50,000 for sage grouse habitat improvement under the Plan. Other general environmental concerns that the Western Shoshone have raised are covered under the NEPA process.

As a result of the analysis undertaken in the CIA and the Betze SEIS, as well as the protective measures outlined in the Betze SEIS Mitigation Plan, the BLM has determined that there is No Effect to the Tosawihi TCP. In the extremely unlikely event that Effects occur to the Rock Creek TCP they shall Not Be Adverse given the actions, funding and water rights presented in the mitigation plans. If you have any questions, please refer these to Kirk Laird (SEIS technical questions, 775/753-0272), Bill Fawcett (archaeology, 775/753-0278), or Gerald Dixon (Native American concerns, 775/753-0383).

Sincerely,

David J. Vandenberg

DAVID J. VANDENBERG
Manager, Nonrenewable Resources

3 Enc: 1. Appendix A
2. Appendix B
3. Response WSDF letter

WBF:9/6/02